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The Huxley Lecture

ON

SOME PROBLEMS IN INFECTION AND ITS CONTROL.

Delivered in the Charing Cross Hospital on Oct. 31st, 1912,

BY PROFESSOR SIMON FLEXNER, M.D.,

DIRECTOR OF THE LABORATORIES OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK.

MR. CHAIRMAN, LADIES, AND GENTLEMEN,—I experience a high sense of honour on this occasion, with which is mingled no less trepidation in view of the master in whose memory this lectureship was founded, and the great names that in the past have been linked with the post I am to-day asked to fill.

HUXLEY AND THE EARLY DAYS OF BACTERIOLOGY.

I must believe that Huxley would have felt a deep interest in the theme which I have chosen to discuss before you, and would have found in its intrinsic importance a compensation for any shortcoming that may appear in the presentation. For Huxley evinced a penetrating appreciation of that branch of biological science that has come to be called bacteriology, and as President of the British Association in 1870 devoted the occasion of his address to an illuminating examination of the doctrine of abiogenesis, or spontaneous generation, *versus* the doctrine of biogenesis or descent from living ancestors. This subject, long holding a merely academic interest, had become in the two decades immediately preceding the ground over which the conflict raged and out of which was to emerge the modern science of microbiology.

While Huxley clearly pointed out that Redi in the seventeenth century and Spallanzani in the eighteenth had delivered the first telling blows that later, through Pasteur, led to the overwhelming defeat of the spontaneous generationists and the establishment on an indisputable basis of the extrinsic origin of the contagious and infectious diseases, he did not fail to perceive in the discoveries just being made in reference to fermentation, putrefaction, and certain fungus and other diseases of insects, the herald of the new science that was to throw its protecting mantle, not about man alone, but about all the higher animals, and even about the plants, in order that the useful and indispensable should be protected from that inevitable contest in nature between higher and lower forms of life which constitutes disease and leads to premature decay and ruthless destruction.

OBSTACLES IN THE INVESTIGATION OF DISEASE: THE CONQUEST OF SYPHILIS.

Bacteriology has, up to now, distributed its favours unequally, but we must not be daunted by this circumstance. It has yielded in some instances knowledge of diseases of small, and withheld in others knowledge of diseases of great, importance. In respect to the common and highly contagious diseases, measles and scarlet fever, for example, progress has been slight. A ray of hope has been cast upon this quest by the announcement[1] that measles can be caused in the monkey by inoculation of infected blood, but this awaits certain confirmation. Similar announcements have been made recently regarding scarlet fever.[2] Since a flood of knowledge has always suddenly flowed from the successful transmission of an obscure disease to the lower animals these reports have been viewed with eager expectation. In the case of scarlet fever I fear the expectation is not yet to be realised. We[3] spent last winter in the study of this subject and failed completely to infect or produce scarlet fever in a wide variety of lower monkeys. Possibly, but not certainly, the higher anthropoid ape, which is still less removed from the human species, is subject to inoculation.[4]

The path of success in relation to the refractory diseases is marked by heavy obstacles, but it must be travelled none the less. How often, indeed, has crowning success come to the brave, thoughtful, and adventurous when all but an expiring glimmer of hope had gone! Witness in this connexion the sudden conquest of syphilis, in which the initial victory was won when it was ascertained that anthropoid apes can be infected experimentally. There followed in rapid succession the discovery of the causative spirochæte, the Wassermann clinical test, and the fabulous drug salvarsan, the usefulness of which outruns the wide bounds of syphilis itself.

But even after such a victory the drama had not come to an end. The spirochætal cause could now be discovered regularly where it had been as constantly missed before; doubts and misbeliefs in it were quickly yielding before the rapidly accumulating evidence; but the micro-organism itself resisted all attempts at artificial cultivation. That the spirochæte is a parasite nicely adjusted to living tissues was clear from the difficulties surrounding the experimental inoculation of animals. Now this act also has been played.[5] The pallida has yielded to artificial culture by Noguchi, and the method sufficing for it has suddenly exposed the whole class of disease-producing spirochætæ and some innocent species as well to cultivation and exploitation under laboratory conditions. It is obvious that the more nicely a parasitic organism is adjusted to its host the more difficult it will be to cultivate it outside the host, and the more quickly it will lose in culture its pathogenic power. The pallida, which for so long resisted the efforts to transmit it artificially to animals and then to cultivate it outside *in vitro*, loses, after a few generations, as was to be expected, its disease-producing virulence, while the blood parasites of relapsing and tick fevers in man and spirillosis in fowls, which are less strictly parasitic and pass a stage of their life in biting insects, retain this power for many generations. In turn, the culture of the pallida has yielded luetin that by causing a local allergic or hypersensitive skin reaction has provided clinical medicine with a new means of detecting latent luetic infection.

POLIOMYELITIS.

With this introduction to the more general theme of the hour, I shall invite you to follow with me somewhat minutely the biological investigation of a disease that is still claiming the absorbed attention of both physicians and people—namely, poliomyelitis, or infantile paralysis. The disease has just been making the rounds of the world, coming as a very unwelcome intruder to many different countries. Until the recent pandemic it was surrounded with mystery and fortified by superstition. It is the story of the working out of the natural history of poliomyelitis, now elucidated in many ways, that I propose to tell you. I have been led to choose this particular disease as my theme both because it has claimed much of my attention during the past several years, and because it illustrates admirably certain general truths to which I desire to call your attention.

Poliomyelitis has been endemic in Northern Europe for many years, but it is only five years since it started on that unique, and as yet unexplained, movement that has carried it around the globe. In America there is no previous history of a general prevalence or epidemic, although local outbreaks of infantile paralysis have from time to time arisen. Some significance attaches to the fact that the first two foci of the present epidemic—I say present, because since 1907 the disease has prevailed severely each summer and autumn at some places in the United States and Canada—arose in the Atlantic coast cities and in the State of Minnesota in the Middle West. The former receive the mass of emigrant population from Europe, and the latter, secondarily, the large contingent of Scandinavian emigrants. The imposition of the infection upon America can thus be accounted for; but no explanation is afforded of the many years of immunity while Scandinavians were constantly arriving, and for the penetration of the disease to other European countries and to far-distant parts of the world. However, within the pandemical period the disease has taken on new

[1] Anderson and Goldberger: Bulletin of the United States Public Health and Marine Hospital Service, 1911, No. 62.

[2] Cantacuzène: Comptes Rendus de la Société de Biologie, 1911, vol. lxx., p. 403. Bernhardt: Deutsche Medizinische Wochenschrift, 1911, vol. xxxvii., pp. 791 and 1062; Centralblatt für Bakteriologie, Parasitenkunde, und Infectionskrankheiten, Abteilung 1, Referate, Supplement, 1911, 1, 27.

[3] Draper, George: Unpublished studies.

[4] Landsteiner, Levaditi, and Prasek: Annales de l'Institut Pasteur, 1911, vol. xxv., p. 754.

[5] Nogouchi, Journal of Experimental Medicine, 1911, vol. xiv., p. 99; 1912, vol. xv., p. 90; 1911, vol. xiv., p. 557; 1912, vol. xvi., p. 199.

activity in Norway and Sweden, and as recently as 1911 the latter country has suffered a severe visitation.

EXPERIMENTAL INVESTIGATION OF THE DISEASE: ROUTES OF INFECTION.

On clinical grounds Scandinavian observers[6] had recognised the essentially infectious nature of poliomyelitis and had followed the evolution of the outbreaks and traced the connexion between many of the cases. They became the defenders of the notion of human carriage, and by establishing certain unusual clinical forms of the disease—such as the meningeal and abortive—placed this idea on firm ground. The notion was further extended to include healthy carriers of the infection who act as intermediaries between the actively ill and the new victims of infection. These views have all alike been treated with more or less scepticism by the medical profession; in how far they have come to be supported by later acquisitions of knowledge will appear.

Apart, then, from these deductions, disputed and disputable, because not supported by certain tests, five years ago the mystery of the disease was wholly unfathomed. The outlook was suddenly brightened when Landsteiner and Popper in 1909[7] announced the successful transmission of poliomyelitis to monkeys, but the high hopes raised were as quickly damped by the failure to propagate the experimental disease beyond the first generation. This obstacle was immediately removed when intracerebral was substituted for intraperitoneal inoculation, as was done by Lewis and myself,[8] and by Landsteiner and Levaditi.[9] By this means the disease could be, and has been, transmitted through an indefinite number of monkeys. The inoculating matter is, first, the sterile spinal cord of a fatal human case, and, afterwards, the spinal cord of paralysed monkeys.

The choice of the intracerebral route as superior to the intraperitoneal was not haphazard. All the severe effects of poliomyelitis are inflicted on the nervous system, and upon reflection this fact at once suggested that the parasitic cause of the disease must find favourable conditions for multiplication within the nervous tissues. When the material carrying the germ is put first into the peritoneal cavity it must traverse the blood before it can reach the nervous system, and the blood, as we know, has the power to destroy many forms of germ life. It could, of course, also be reasoned that the specific parasite, in nature, cannot enter the nervous tissues directly, but must use some external route to reach them, and it must, therefore, be capable of surviving outside the brain and spinal cord; and it could be further reasoned that an inoculation into a more accessible part of the body than the brain and spinal cord should be effective, and if effective would bring stronger proof of the actual existence of a parasite in the inoculated matter. This reasoning is unconvincing for two causes: first, the monkey is not naturally subject to poliomyelitis, and is, therefore, presumably more difficult to infect at all than is man, so that what may suffice to cause infection in man may fail in the monkey; and secondly, it might be possible for pathogenic microbes to reach the central nervous system even in man without entering the blood at all, so that in nature the infectious cause of poliomyelitis might avoid the blood altogether. That this possibility really exists has been proved by experiment as we shall see. Doubtless the first material inoculated into the abdominal cavity carried besides the living parasites toxic or other injurious substances that promoted infection in the monkey; but when the nervous tissues of the monkey were similarly injected, being less harmful, the inoculation failed. Bacteriology contains many instances of similar, and apparently of paradoxical, nature.

The discrepancy has been further elucidated as will soon appear, but in the meantime it is desirable to inquire whether still other routes of infection do exist for the monkey. Since nervous tissue is favourable to the parasite it was injected into large nerves—such as the sciatic—in order to ascertain whether these furnished a suitable medium of propagation. The parasite grows along the nerve until the spinal cord is reached and produces injury of the cord first at the point of entrance before it extends to and attacks other parts. The injection into the nerve causes no symptoms, but paralysis of the innervated muscles appears after the lapse of a time sufficient for the necessary multiplication of the parasite and its passage into the spinal cord.

Meanwhile the inoculated monkey shows no other signs of illness, and no other organ is severely affected; the injury is centred upon the nervous tissues. And not only does the parasite grow or flow along the nerve, but it ascends along the spinal cord from lower to higher levels and eventually reaches the medulla and brain. At last the centres governing respiration are involved and death by paralysis ensues.

PATHOLOGICAL EFFECTS ON SPINAL CORD AND BRAIN.

We have now been able to arrive at several important conclusions. The monkey can be made regularly to develop an experimental disease agreeing in all essential respects with poliomyelitis in man. Inoculation is necessary, since keeping healthy and paralysed monkeys together does not lead to infection. The parasitic cause of the disease can traverse the blood, in the monkey, to reach the central nervous organs, but with difficulty, while it easily traverses the peripheral nerves. That the natural, spontaneous disease, so called, in man and the induced disease in monkeys are very alike is further shown by microscopic study of the spinal cord and brain, which exhibit changes that are identical.

The pathological effects are of two kinds: injury to nerve cells, not in the anterior grey matter alone, but in the posterior grey matter of the spinal cord and in the intervertebral ganglia, medulla, and brain; and cellular invasion of the pia-arachnoidal membrane of the spinal cord and medulla that follow the blood-vessels into these parts and pass into the adjacent grey and white matter. The altered vessels permit an escape of albuminous fluid and blood cells into the meshes of the membrane, where they mingle with the cerebro-spinal liquid, and into the spaces in the tissue composing the solid white and grey matter. Sometimes the nerve cells, sometimes the meninges, vessels and supporting tissues suffer most. When the nerve cells are extensively injured the paralysis is marked; when the meninges are much affected the symptoms are like those of meningitis. The virus of poliomyelitis displays a high affinity for nervous tissues, but it is the wide involvement of the nutritive vascular system in the pathological process that subjects the sensitive nerve cells to so high a degree of injury and destruction.

THE INFECTIOUS AGENT OF POLIOMYELITIS.

The microscopical conditions we observed in the course of our experiments were suggestive of two things: first, the nature of the parasite itself; and secondly, the process of generation of the effects or lesions themselves. Up to this time no definite parasite could be detected in the nervous tissues either in human beings or monkeys, nor was anything of the kind found in the blood or other organs. The scarcity of polynuclear leucocytes in the altered cerebro-spinal liquid and spinal cord itself spoke against a simple bacterial parasite. The large number of mononuclear cells spoke rather for a protozoal parasite. Neither could be found, although the most varied methods of staining and cultivation were employed. There remained the possibility of the parasite being invisible or ultramicroscopic and filterable. This it proved to be, for when a portion of the spinal cord of a recently paralysed monkey was made into an emulsion with sterile distilled water or simple saline solution and then centrifuged to remove the coarse suspended matter and afterwards pressed through a Berkefeld earthenware filter—which excludes ordinary cells, bacteria, and protozoa—the clear liquid resulting was still capable of transmitting the disease. The activity of the filtrate is very great, since a fraction of a cubic centimetre still suffices to cause paralysis and death. The only distinction to be noted between the action of corresponding amounts of the emulsion and filtered fluid is that the former acts more quickly, as would be expected from the fact that it contains a greater number of the invisible organisms. This difference is soon compensated by the multiplication of those in the filtrate, so that the end result is the same. By employing somewhat greater

[6] Wickman: Beiträge zur Kenntnis der Heine-Medinschen Krankheit, Berlin, 1907.

[7] Landsteiner and Popper: Zeitschrift für Immunitätsforschung, Originale, 1909, vol. ii., p. 377.

[8] Flexner and Lewis: Journal of the American Medical Association, 1909, vol. liii., p. 1639; Journal of Experimental Medicine, 1910, vol. xii., p. 227. Flexner: Journal of the American Medical Association, 1910, vol. lv., p. 1106. Flexner and Clark: Ibid., 1911, vol. lvii., p. 1685.

[9] Landsteiner and Levaditi: Comptes Rendus de la Société de Biologie, 1909, vol. lxvii., p. 592. For general bibliography consult Römer, Die epidemische Kinderlehrnung, Berlin, 1911.

quantities of the filtrate for inoculation the incubation period of the disease can be made the same as that following the use of the emulsion. The disparity is strictly a quantitative one, since the filters retain a part of the minute organisms in their pores and thus reduce the number escaping with the filtrate. The greater the quantity of protein matter present in the fluid the fewer the parasites that pass the filter, and merely because the large protein molecules themselves tend to be held in the pores and thus render them impervious for the minute organisms. For this reason, also, fluids containing small numbers of the filterable parasites, but still sufficient to cause infection in the crude state, may fail, when filtered, to produce disease merely because those retained by the filter so far reduce the numbers as to bring them below the surely infecting dose. This reduction sometimes leads to another effect—namely, the slight degree of infection that forms the starting point of active immunisation. By building upon such a beginning a high and enduring state of immunity has been achieved.

Filterable Viruses.

The first filterable parasite was discovered by Loeffler 14 years ago, in the fluid lymph obtained from the vesicles of cattle suffering from foot and mouth disease. At the present time 18 diseases are known that are believed on good ground to be caused by this class of minute living organisms. One alone among them is on the verge of visibility—the parasite causing pleuro-pneumonia of cattle. It alone has certainly been obtained in artificial culture. The method of artificial cultivation needs still to be worked out; and once they are discovered it is a safe prediction that control over the diseases produced by ultra-microscopic parasites will be quickly increased. The degree of infectivity of certain of the parasites—or viruses as they are also called—is almost fabulous. One-thousandth of a cubic centimetre of a filtered 2·5 per cent. suspension of a spinal cord of a paralysed monkey suffices to cause infection and paralysis in another monkey, 1/20,000th of a cubic centimetre of infected lymph suffices to produce foot and mouth disease in a healthy calf, and the blood of fowl suffering from chicken plague is still active after being diluted with water 1000 million times.

Three affections of human beings are contained among the 18 diseases caused by filterable viruses: they are yellow fever, dengue, and poliomyelitis. With one exception—mosaic disease of tobacco—the remaining 14 are maladies of domestic animals, and include among them foot and mouth disease, horse sickness, cattle plague, sheep pox, rabies, vaccinia, hog cholera, and chicken plague. We can at present form no reliable conception of the biology of this class of parasite, although the virus of pleuro-pneumonia shows affinities with the bacteria, while that of yellow fever, that passes a stage of its existence in mosquitoes, probably belongs to the protozoa. It should be remembered that we possess no criterion of their presence other than the power to produce infection. Probably the list of these pathogenic parasites would be increased if methods were known for testing their symbiotic relations or coöperative effects with the usual bacteria and protozoa. Rous's[10] discovery of a filterable agent that causes sarcomatous tumours in the fowl has opened up new fields to exploration. We can make a rough guess as to their sizes since some pass through thick filters the pores of which are smallest, while others pass the more porous filters with larger interstices only. Were the viruses as large as one-fifth the size of the influenza bacillus they would be beyond visibility with the most powerful optical system of the modern microscope. The dark-field microscope and the instrument devised for employing, for photographic purposes, the ultra-violet rays of the spectrum, that has doubled the potential power of the microscope, have failed to bring them into view. On the whole they resist drying well and show considerable resistance to disinfecting agents.

The ultra-microscopic viruses employ no single means of effecting entrance into the body. Some utilise insects to inject them into the blood. Mosquitoes inoculate the parasites of yellow fever and of dengue in man, and among animals the virus of horse sickness; while flies inject the virus of parrot fever, and worms and other insects, through mere contact with infected and then with uninfected tobacco plants, disseminate the parasite of mosaic disease. The viruses of rabies, vaccinia, and fowl pox gain entrance through skin wounds, those of hog cholera, foot and mouth disease, and chicken plague by swallowing, while the parasites of variola and of pleuro-pneumonia are inhaled with air. These are the main avenues, but not the sole routes of infection, since viruses that ordinarily enter the body by the respiratory mucous membrane may occasionally enter through a skin abrasion, &c.

It is significant that upon recovery from this class of infections a high and enduring degree of immunity is left behind. We have no knowledge of toxic substances, in the common sense, being produced by the filterable viruses, and therefore know nothing of the formation of antitoxins or bodies that neutralise poisons. The principles upon which the immunity depends appear to be chiefly microbicidal substances that act directly upon the living parasites and destroy them. In some instances it has been possible to produce an actively immune state without at the same time causing severe disease, by employing for inoculation modified and weakened viruses, and viruses combined with immune sera carrying the corresponding microbicidal substances. Once a certain active immunity is obtained it can be heightened by repeated injections of more active materials until a high degree is achieved. In the same manner immune animals that have recovered from disease are capable of having this immunity reinforced by subsequent injections of the active virus. Blood taken from the immune animals has been employed in practice in two ways: to protect for a brief period exposed animals from acquiring infection, and to bring about an actively immune state through inoculation with adjusted mixtures of virus and corresponding immune serum. The injection of viruses into animals not themselves subject to infection has, in a few instances, yielded immune sera. In this way a serum for foot and mouth disease has been prepared in the horse. Speaking generally, homologous sera are more active than heterologous, or, in other words, an immune cattle serum will act better in cattle than will immune horse serum; but curative sera in a real sense have not yet been produced for this class of diseases.

Properties of Virus of Poliomyelitis.

It is of great interest to determine the correspondence between the general data I have just reviewed and the special facts of poliomyelitis which have been shown to arise in consequence of an invasion of the nervous tissue by an ultra-microscopic or filterable virus.

We may proceed to check off rapidly the main facts. The virus stands midway in point of size between the finest and coarsest examples. It passes readily through the more coarse and slightly through the finest filters. It is highly resistant to drying, light, and chemical action. In dust, especially within protein matter, it survives weeks and months; in diffuse daylight indefinitely, and resists the action of pure glycerine and carbolic acid in 0·5 per cent. solution for many months. When animal tissues containing the virus suffer softening and disintegration or disorganisation by mould the virus survives.

Recovery from poliomyelitis in man and monkey is attended and produced by an immunisation of the body. During this process microbicidal substances appear in the blood that are capable of neutralising the active virus. This acquired immunity has, in the monkey, been reinforced by subsequent injection of large quantities of the living virus. Active immunity can be achieved by first injecting minute and later large amounts of the virus; and an adjusted mixture of immune serum and active virus will confer a beginning low active immunity capable of being heightened.

Certain alien large animals, among which the horse and sheep are especially worth mentioning, are subject to immunisation through injections of emulsions of the spinal cord and brain of paralysed monkeys, and can thus be made to yield sera possessing microbicidal power and capable of conferring, as do human and monkey immune sera, a degree of passive immunity. Thus far no immunising effect has been accomplished with the dead virus. Unless some growth and modification take place no immunity arises.

Mode of Infection.

These facts show a close correspondence between the properties of the virus of poliomyelitis and those of the ultra-microscopic organisms in general. There remain to be considered the data bearing upon the manner of entrance of

[10] Rous: Journal of the American Medical Assn., 1911., vol. lvi., p. 198.

the poliomyelitic virus into the body or, in other words, upon the mode of infection.

Analogy with other diseases produced by filterable viruses excludes no one of the possible modes, since their manner of entrance is widely varied, as we have seen. This question is of the utmost importance, since with all diseases prevention is far better than the most perfect cure, and for poliomyelitis there exists at present no specific or true curative treatment. Moreover, for the most part when the disease is first recognised it has already caused irreparable damage, and though the more general examination of the spinal fluid obtained by means of lumbar puncture for purposes of diagnosis may possibly lead to a much earlier recognition of the disease, yet its prevention will always remain the result to be aimed at. It is quite certain that an understanding of the mode of infection would lead inevitably to the framing of measures of prevention that with reasonable certainty could be expected to exercise control over the epidemic spread.

Two answers may be returned to the question: one based upon observation of human cases of poliomyelitis, and the other based upon experimental tests arranged to elicit specific replies. The first answer cannot achieve anything higher than strong probability; the second, to be valid, must explain the phenomena attending the human infection as well as those of the experimental disease. We are asked to account for certain data, of which the following is a brief statement.

Epidemic poliomyelitis is pre-eminently a disease of early childhood and finds the highest percentage of its victims in the first five years of life, but does not wholly spare older children or even adults. It is admittedly infectious, and while it is true that many more instances of single than of multiple cases occur, yet multiple ones are not by any means rare. The prevailing views on this topic are being modified rapidly by the recognition of the abortive and ambulant examples of the disease. The period of greatest prevalence is during the months of August, September, and October in the northern hemisphere and the corresponding months in the southern hemisphere, but the epidemic begins in the early spring and summer months, and the disease does not wholly disappear during the winter months. It does not, therefore, necessarily die out at any period of the year. In endeavouring to trace the channel of entrance of the virus into the body certain facts regarding its distribution in the body should be recapitulated and considered.

The infectious agent of poliomyelitis attacks chiefly the central nervous system. Indeed, it has been detected regularly in the spinal cord and brain, and in the mesenteric lymph nodes among all the internal organs. It has also been detected in the mucous membrane of the nose and throat, and in the mucus secretions of this membrane, and in the mucus secretions of the stomach, and the small and large intestine. The virus has not been detected in such important organs as the spleen, kidneys, liver, or bone marrow. The fact is significant, but in attempting to interpret it account should be taken of the circumstance that at present we possess one means only of detecting the virus, and that is its transmission to monkeys, in which it produces characteristic paralyses and anatomical changes. On this account small quantities of the virus may conceivably escape discovery. However, the conclusion is none the less inevitable that detectable amounts of the poliomyelitic virus exist only in the few situations and organs mentioned. The distribution of the virus is identical in human beings, the subjects of the so-called spontaneous poliomyelitis, and in monkeys, in which the experimental affection is produced. Nor does it matter how the experimental inoculation is accomplished, and whether the virus is introduced by injection into the brain or large nerves or subcutaneous tissue or peritoneum, or whether it is merely applied to the nasal mucous membrane, which, it should be emphasised, next to direct intracerebral injection, affords the surest means of causing the experimental disease. In whatever way the infection is produced purposely, the distribution of the virus in infected monkeys is the same as in infected human beings.

The virus is one that is not known to increase aside from the infected body, and hence in order that it shall be capable of propagating poliomyelitis it must secure a means of escape from the infected animal. The escape is now known to occur along with the secretions of the nose and throat and the discharges from the intestine. We are obliged, therefore, to ask ourselves what the means are by which the virus confined within the interior reaches these external surfaces of the body.

PASSAGE (IN INFECTED ANIMALS) OF VIRUS INTO NOSE, THROAT, AND INTESTINES.

Let us begin by disregarding for the moment the essential point of the way in which the virus probably enters the body in infected human beings, and give our attention to the way in which it escapes in the infected monkey into the nose, throat, and intestines.

We may first consider the instance in which the virus is deposited in the brain, in which it becomes sealed, as it were, and cut off apparently from the exterior of the body. Having been injected into the brain, the infectious microorganism constituting the virus multiplies both within and about the brain tissue at the site of inoculation. As multiplication progresses, the virus leaves the original site of injection and wanders through adjacent and distant parts of the central nervous tissues, becoming implanted in the medulla, the spinal cord, and the intervertebral ganglia, as well as reaching the pia-arachnoidal membranes, or meninges, in which it also spreads. Ultimately, when the virus becomes sufficient in amount, it brings about anatomical changes in the nervous system, one of the results of which is paralysis. The period intervening between the inoculation and the appearance of paralytic symptoms may be as brief as two or three days, or as long as three, four, or five weeks. The great disparity in this period depends upon the amount and quality of the virus, as well as the degree of resistance of the inoculated monkey.

The virus which has found its way to the meninges does not long remain in the cerebro-spinal fluid, with which it escapes in part into the blood, where it does not appear to undergo any further increase in amount, and indeed seems even incapable of surviving for long. A part also of the virus contained within the cerebral fluid escapes regularly by way of the lymphatic channels surrounding the short nerves of smell that pass from the olfactory lobes of the brain to the mucous membrane of the nose. It has long been known that there is an intimate connexion between the lymphatic vessels of the nasal mucous membrane and the lymphatic spaces of the pia-arachnoidal membrane.

The virus once having gained the mucous membrane of the nose may even escape into the mucus secretion, with which it is carried into the mouth, and in part swallowed, or it may become established in the substance of the nasal membrane, where it undergoes subsequent multiplication and increase. As a matter of fact both these things occur. The virus escapes with the secretions partly externally to the infected body, and a part of it is swallowed with the secretions themselves, while a persistent infection of the secretions is maintained by means of the increase that takes place in the membrane itself. In this way is assured the escape of the virus directly into external nature, as well as the contamination of the gastro-intestinal cavity, with the discharges of which it becomes commingled.

Once implanted upon the intestine multiplication not improbably continues for a time, and another source of invasion of the body is thus afforded the parasite. From the intestine it reaches in some amount the mesenteric lymph nodes, and thus enables us to account for the occurrence of the virus in those lymphatic nodes which thus form a notable exception to the general internal organs of the body.

SITE OF ENTRY AND EXIT OF VIRUS IN MAN.

We have now followed the route by which the poliomyelitic virus implanted within the apparently closed cavity of the skull reaches the exterior of the body. It is obvious that in the spontaneous form of the infection in man no such mode of introduction of the virus can occur. The virus must indeed enter the human body by some external channel, after which it seeks and becomes implanted upon the central nervous system. It is known that in monkeys the virus is incapable of passing the barrier of the unbroken or slightly abraded skin, of being taken up from the stomach or intestine unless the functions of these organs are previously disturbed and arrested by opium, and it is further known that it traverses with difficulty, or even not at all, the substance of the lungs. On the other hand, it is established that the virus passes with readiness and constancy

from the intact, or practically intact, mucous membrane of the nose to the central nervous system.

To illustrate this point I wish to describe briefly an experiment. The spinal cord of a paralysed monkey always contains the virus we are considering. If a camel's hair pencil or pledget of cotton is covered with some of the broken-up tissue of such a cord and painted upon the mucous membrane of rhesus monkeys these animals will develop in due time the paralysis and other symptoms of poliomyelitis. Hence the virus enters the body from this surface, even though no gross injury has been inflicted upon the membrane.

We should now ask ourselves if the virus actually ascends to the brain by the direct path of the olfactory nerves or indirectly after first entering the blood. This is the same question that has been buffeted about in regard to epidemic meningitis. The meningococcus is found in the nasal mucus of persons in contact with cases of meningitis and in the sick themselves. It is not disputed that the meningococci settle on this membrane, but opinion is divided as to whether it goes at once to the membranes of the brain or first penetrates into the blood. To produce meningitis in monkeys it does not suffice to inoculate the nasal membrane; the meningococci must be injected into the meninges themselves. But so inoculated they escape in part along the nerves of smell into the nose. The virus of poliomyelitis is so active that implantation in the nose does suffice to cause infection. If a monkey is sacrificed about 48 hours after an intranasal inoculation and the brain and spinal cord are removed and then the olfactory lobes, portions of the medulla and spinal cord are separately inoculated into other monkeys, infection is produced by the olfactory lobes alone, since in this brief period the virus has not yet reached other and more distant parts of the nervous organs.

Were the virus distributed by the blood the medulla and spinal cord would have become infective rather than the olfactory lobes, since they exhibit a greater selective affinity for the parasite. The conclusion is unavoidable that the virus ascends by the nerves of smell to the brain, multiplies first in and about the olfactory lobes, and in time passes, as I believe, into the cerebro-spinal liquid which carries it to all parts of the nervous organs. We have already learned that the virus can pass along a large nerve, such as the sciatic, which carries it first to the lumbar cord, whence it ascends to higher levels; we need not, therefore, be astonished to find that it can wander along the olfactory nerves and then descend to lower levels. The large peripheral nerves are prevented anatomically from becoming infected in nature, while the small olfactory filaments are advantageously placed to act as the means of transportation.

Hence the view I desire to place before you: that the nasal mucous membrane is the site both of ingress and egress of the virus of poliomyelitis in man. Support for this view is found also in the study of the microscopic changes in the meninges and the central nervous tissues. Since the virus survives in the dried state it may be carried in dust; and in one instance it has been detected in sweepings from the room occupied by a person ill with poliomyelitis.[11] Its distribution as spray in coughing and speaking is readily accomplished, and by this means both active cases and passive carriers may conceivably be produced.

Still one link in the chain of causation of poliomyelitis as here outlined remained to be forged. The clinical evidence is strong in the suggestion that human carriers of the poliomyelitic virus exists. The virus has now been detected in the secretions of the nose, throat, and intestine of persons suffering from abortive or ambulant attacks of poliomyelitis.[12] The unrecognised examples of the abortive disease play a highly important part in the dissemination of the virus, through which the area of infection is extended, and the number of the attacked increased.

A similar part has been accorded by clinical observation to the healthy virus carrier, and the healthy carrier is the last to be detected, and his existence confirmed experimentally. The obstacles in the way of this confirmation are considerable but not insuperable. It is to be remembered that we possess no means of discovering the virus except that of animal inoculation. Should the experimental results arising from the inoculation of the secretions of the nose and throat of such healthy carriers be confirmed the evidence for the mode of infection as here outlined would be complete. The membrane of the nose and throat is far more vulnerable in young individuals, whence arises the greater prevalence during childhood of those diseases the causes of which seek this avenue of entrance into the body. Among them are included diphtheria, measles, scarlet fever, and meningitis.

[11] Neustaedter and Thro: New York Medical Journal, 1911.

[12] Kling, Wernstedt, and Pettersson: Zeitschrift für Immunitätsforschung und Experimentelle Therapie, orig., 1912, Band xii., p. 316.

Experiments as to Insects Carrying the Infection.

Would the establishment of the respiratory avenue of entrance of the virus exclude all other modes of possible infection? By no means. Plague bacilli are known to be inoculated into man by rat fleas; but the pneumonic form of the plague is admittedly caused by respiratory inoculation. Diphtheria arises upon the mucous membrane of the throat, but can develop in a wound of the skin; the virus of smallpox enters by way of the throat and nose, but can enter by a skin abrasion; the virus of foot and mouth disease is taken in with food, but produces infection when injected into the skin. Hence at the moment, while knowledge is still recent and not yet perfect, the too absolute adherence to one point of view is to be avoided.

Indeed, the preponderance of cases in the late summer and autumn months early suggested an insect carrier of the infection. House flies can act as passive contaminators, since the virus survives upon the body and within the gullet of these insects. It has not proven possible thus far to infect the common varieties of mosquito, and the body and head louse, while success has resulted in one instance in producing infection in bed bugs which were made to feed upon the blood of inoculated monkeys. The virus remained alive within these insects for a period of many days. The inoculation of monkeys with a filtrate prepared from them gave rise to characteristic paralysis and anatomical lesions. This result is significant, since it shows that insects are capable of taking up the virus from the blood, where it exists in minimal quantities, and in harbouring it for a considerable period in an active state; but it does not show that multiplication occurs within them or that in nature they act as the agents of inoculation. A tentative announcement has been made recently by Rosenau[13] that the stable fly (stomoxys calcitrans) can take up the virus from the blood of infected monkeys and reinoculate it into healthy ones which will become paralysed. The experiment awaits confirmation and, after confirmation, convincing application to the circumstances surrounding infection in human cases of poliomyelitis.

Domestic Animals as Sources of Infection.

The frequent prevalence of epidemics in sparsely populated country districts has led, moreover, to consideration of domestic animals as sources of the infection.

Paralysis of dogs, horses, pigs, and fowl has been observed not uncommonly, but thus far without clear correlation with paralysis in man. Perhaps the most frequently observed coincidental paralytic diseases have been between hens and human beings. Undoubtedly since the wide prevalence of epidemic poliomyelitis, the existence of a paralytic disease among barnyard fowl has been more commonly noted. Possibly the condition has not actually become more frequent, but owing to the circumstance mentioned it has been oftener observed. It appears that the paralysis among fowl is caused, not by lesions of the central nervous system, but by lesions of the peripheral nerves, and is due to a peripheral neuritis.

It has not been found possible to transmit by direct inoculation the paralytic disease from chicken to chicken, or from chicken to monkey, or from paralytic monkey to chicken. However, it has been found possible to develop the paralysis in the laboratory by keeping the chickens in confinement for some time, and by supplying them an unusual and improper form of food. It has proved as little possible to transfer the paralytic affection of dogs from one individual to another by direct inoculation, or from dog to monkey, or from paralysed monkey to dog, or to set up paralysis in monkeys by inoculating them with nervous tissue obtained from paralysed pigs, or to produce paralysis in pigs with the virus of paralysed monkeys. These failures do not, of course, exclude the possibility that a reservoir for the virus may exist among domesticated animals that do not even

[13] Rosenau, M. J.: Communication at the International Congress of Hygiene and Demography, Washington, 1912.

respond to its presence by developing paralysis or other conditions which could be recognised as resembling poliomyelitis in man.

The manner of action of the virus of poliomyelitis in rabbits provides an illustration which shows how necessary it is to avoid general deductions in this field. At first it was strenuously denied that rabbits could be infected at all with the virus of poliomyelitis, and the examples of supposed successful inoculation reported were entirely disbelieved; but it must now be accepted that young rabbits occasionally, but by no means generally, are subject to inoculation with the virus of poliomyelitis, at least after it has passed through a long series of monkeys. Apparently a small percentage only of the inoculated rabbits develop any obvious symptoms, and these die, as a rule, during convulsive seizures which come on suddenly. A given virus has up to the present been sent through a series of six rabbits, after which it has failed to be further propagated. From the sixth series it has been reimplanted on the monkey, in which animal typical paralysis has been produced. It remains to add that the rabbits which succumb to the inoculation do not show any characteristic alterations of the central nervous system or other organs, as far as has been determined. The monkey, on the other hand, invariably shows the typical lesion of the central nervous system.

Identity of Sporadic and Epidemic Cases.

Long before epidemic poliomyelitis had the wide distribution or claimed the attention now accorded it instances of infantile paralysis were known to everyone. Almost every community could point to one or more examples of the condition, and no one entertained the suspicion that the cause of the paralysis was an infectious or even contagious disease. Are these isolated cases of paralysis occurring among infants of the same nature as the epidemic paralysis, or has there merely been a confusion of names?

We possess means that permit an answer to this important question. Recovery, as you recall, is associated with enduring immunity, and the person or animal immune to poliomyelitis carries in his blood principles that neutralise the virus causing the disease. The blood of normal persons or animals lacks this property in any real degree. The test is, therefore, easily made: a mixture of the serum of the blood and virus is prepared, and after being in contact for a time is injected into a monkey. Thus it has been determined that the two diseases are caused by the same parasite, and it has been found that the neutralising principles are still present as long as 25 years after the attack of paralysis, and doubtless persists through life. This test has been employed likewise to identify abortive cases of poliomyelitis in which paralysis has not appeared at all.

There is nothing unique in this apparently paradoxical situation. Most, if not all, of the epidemic diseases prevail at some time as sporadic affections—that is, as diseases of occasional occurrences. This is true of influenza, plague, and particularly of meningitis, with which poliomyelitis displays so many affinities. Knowledge is still very imperfect as to just what happens when an epidemic spread of a sporadic disease takes place. Sometimes conditions arise that favour rapid transference of the infecting microbe from individual to individual, through which a rise in virulence is accomplished very much as is done every day in the laboratory to enhance the potency of cultures. In respect to poliomyelitis, as seems also to be the case with meningitis, a fresh importation of an already enhanced virus probably occurs and is the immediate cause of the epidemic. The introduction may be at one point or at several points simultaneously, according to which the epidemic arises in, and spreads from a single centre or from many foci. Finally, sports or abnormally virulent parasites appear, prevail actively for a period, and then become reduced to an average degree of intensity, perhaps never to rise again. Some of the exceptionally severe epidemics of which history tells us may be thus accounted for. Such sports have been encountered in laboratories in regard to both pathogenic bacteria and protozoa.

Question of Different Strains of Virus.

Are biologically different strains of a poliomyelitic virus known? The evidence at hand is to the effect that different strains or races certainly exist if virulence be taken as the measure. German, Austrian, and French pathologists found that of the human specimens of spinal cord submitted to them for study about one-half could be inoculated successfully into monkeys, and less than this number could be propagated through successive animals. In America all the original specimens were successfully inoculated, but certain samples were far less active than others. At the beginning many of the inoculated monkeys survived the infection, sometimes with, sometimes without, enduring paralysis of leg or arm. Later fewer survived, and after many passages of the virus from monkey to monkey all became infected and all succumbed.

The Swedish virus of 1911 appears to be the most powerful yet studied. This is indicated by the fact that saline washings of the nose and throat and intestine could be inoculated successfully, after removal of all bacteria through filtration, in nearly every instance. In America it has been difficult to procure infection with these materials, from which it has been concluded that the virus displays degree of infectiousness for monkeys. There are reasons for supposing that similar variations exist for man himself.

We may not, and probably shall not, know certainly whether this variability is restricted to the quality of virulence, or whether true types or races of the virus exist until artificial cultivation has been accomplished. Bacteriology has been singularly enriched recently by discoveries relating to biological types of certain microbes; and practical medicine is destined to benefit largely by the strong light which they have thrown upon perplexing questions of specific therapeutics. I am tempted to lead you aside a little way into this subject just because it is so full of suggestion and promise, and not merely with promise, since the fruits of discovery are being already tasted.

Observations on Pneumococci and Antipneumococcus Serum.

The pneumococcus causes many kinds of inflammation and one typical disease that prevails everywhere—namely, acute lobar pneumonia. Not infrequently there attend the pneumonia, and sometimes there appear independently, such inflammations as peritonitis, pleuritis, and meningitis, caused also by the pneumococcus.

Now pneumococci possess in common biological features regarded usually as sufficient to distinguish them—namely, form, staining properties, growth, virulence and solubility in bile salts. But they have another quality that serves to distinguish them more finely, revealing different types among apparently similar organisms. By testing pneumococci from many different sources against an immune serum prepared with a single kind of the coccus it has been found that the cocci are not all alike, but that a predominant type and several subsidiary types occur in nature.[14] Such a serum prepared with a given type of pneumococcus is neutralising alone for that one, and for no other one. The clinical reports on the antipneumococcus serum employed as a curative agent are contradictory, and one cause for this is now apparent.

Pneumococcus meningitis can be produced in monkeys by injecting subdurally by lumbar puncture a virulent culture of pneumococcus; it is invariably fatal. Antipneumococcus serum alone injected subdurally can change the outcome very little. But this infection is subject to combined chemo- and serum-therapy in which the chemical agent consists of sodium oleate that alone attacks and dissolves the pneumococcus. Acting separately, in the body, sodium oleate can accomplish little; it requires the assistance of the immunity principles. Acting together, the two agents quickly bring the infection under control and recovery follows. This happens even after the pneumococci have entered the blood stream and begun to multiply there. The effects of the soap and serum compound are, however, restricted to the type of pneumococcus represented by the immune serum in the mixture.[15] When the type of micro-organism and serum differ absolutely no therapeutic action follows. This obstacle to the practical employment of this method of specific treatment will doubtless be reduced or even wholly set aside by preparing a true polyvalent immune serum that will represent not many cultures of the pneumococcus taken at

[14] Neufeld, F., and Händel: Zeitschrift für Immunitätsforschung, Originale, 1909, Band iii., p. 159; Arbeiten aus dem Kaiserlichen Gesundheitsamte, 1910, Band xxxiv., p. 293; Berliner Klinische Wochenschrift, 1912, Band xlix., p. 480.

[15] Lamar, R. V.: Journal of Experimental Medicine, 1911, vol. xiii., p. 1; 1912, vol. xvi., p 581.

random, but the several types or races occurring in nature. We already know the number to be few.

It has become the custom to speak of these types of microbes as resistant or "fast," but the term is relative merely. The fact and degree of fastness will be revealed by the source of the test-serum. But within a given microbic species this quality of resistance may well appear against chemical bodies as well. Pneumococci, for example, vary in properties by gradual gradations in the direction of the streptococcus, which, besides differing in still other biological properties, chances not to dissolve in bile. The gradients of pneumococci approaching the streptococcus are progressively less acted upon by sodium oleate. The trypanosome of sleeping sickness is less subject to the therapeutic action of certain organic arsenic compounds in some regions in Africa than in others. The antimeningitis serum suppresses the growth and multiplication of most meningococci, but not of all. This quality of fastness is not alone innate, but can be developed artificially as a mutation both against serum principles and chemical drugs and may persist.

Infectious diseases showing a strong tendency to relapse in course of recovery are caused by microbes tending to flourish as races or types. Relapsing fevers that pass through three or four exacerbations on the way to recovery are attributed to spirochaetæ assuming a corresponding number of distinct forms. Infections tending to many relapses, of which lues is an example, are attributed to parasites capable of flourishing in many such types of which one part is innate and the other the result of mutations under the influence of curative serum or drug. Fortunately, there appears to be no parasite capable of performing indefinite mutations; and experience is teaching that the more precise, specific, and vigorous the means employed to control infection, the smaller the risk of mutation and the greater the probability of suppression of the parasitic agent of disease.

In 1886[16] Theobald Smith first clearly pointed out that the injection of dead bacteria confers active immunity to subsequent inoculation with virulent materials. Now the employment of dead bacteria is widespread, both for preventing and for healing disease. Wright especially is to be credited with the general application of the method to therapeutics. While the limits of value of inoculation, as it is termed, are not yet defined and it promises, theoretically, more for the subacute and chronic than for the acute infections, I am inclined to the belief that to be really effective attention will need more and more to be accorded to the question of specific type in the infecting bacteria.

Deficiency of Cerebro-spinal Fluid in Curative Principles.

In pursuing the devious courses of infection, of which examples have just been given, the fact has emerged that the effectiveness of curative means will be determined not only by the intrinsic qualities of the parasites, but also in a high degree by the manner of location and distribution of the parasites themselves within the infected host. Whether they have a general distribution throughout the blood and tissues, or whether they are confined within an important organ or part, may be the factor determining the ease with which they can be reached, not only by the natural curative principles of the body, but also by artificial curative agents introduced into the body.[17]

The parasite, struggling to survive, withdraws, at one time, into situations to which the curative substances gain access imperfectly and with difficulty, causing thereby local infections more or less cut off from the general circulation and the curative substances purveyed by the blood. This is the condition met with in localised inflammation and in infections of specialised portions of the body, such as the great serous cavities, that receive a modified and dilute lymph secretion carrying reduced quantities of the protective principles contained within the blood. The quality of lymph in the several serous cavities and in the various tissues is not the same, and the lowest limit of strength is reached by the cerebro-spinal fluid that functions as the lymph of the brain and spinal cord. The exclusion of dissolved substances from the cerebro-spinal liquid is a provision of great importance, but is not an unmixed good. For while it affords protection to the sensitive nervous tissues from injurious chemicals, it deprives them also of curative principles.

Happily this deficiency has now been superseded by a method of direct local treatment by injections that has given excellent results in meningitis, and is now being employed in luetic affections of the meninges and central nervous organs with encouraging results.[18]

Treatment.

Remote as some of them may seem, the considerations to which I have called your attention have a bearing more or less vital upon the problem of a specific and effective treatment of poliomyelitis.

Poliomyelitis is not a disease with a very high mortality; its chief terror lies in its appalling power to produce deformities. When death does occur it is not the result, as in many infections, of a process of poisoning that robs the patient of strength and consciousness before its imminence, but is caused solely by paralysis of the respiratory function, sometimes with merciful suddenness, but often with painful slowness, without in any degree obscuring the consciousness of the suffocating victim until just before the end is reached. No more terrible tragedy can be witnessed.

I have already laid before you certain facts regarding immunity in poliomyelitis, and it remains to be added that the employment for treatment of the immune serum, taken from monkeys or from human beings, exercises a definite if not very strong protective action upon inoculated monkeys. Either the disease is prevented altogether or its evolution is modified in such a manner as to diminish its severity. When the virus used for inoculation is highly adapted to the monkey, and thus very virulent, it is more difficult to control the result than when it departs less from the original human type and is less active.

The immune serum has thus far acted best when it was injected into the subdural space on several successive days. This is in conformity with the fact that, however introduced into the body, the virus establishes itself in communication with the cerebro-spinal liquid, where it propagates for a time. After a time the virus localises in the nervous tissue itself, and becomes accessible not only from this liquid, but probably from the general blood also. The serum introduced into the subdural space soon escapes into the blood; and thus a double action is secured. On the one hand it reaches the nervous tissue directly from the cerebro-spinal liquid, and on the other with the blood. An immune horse serum at first gave disappointing results, but latterly its employment by intramuscular injection has given more promise. But none of the sera mentioned can be regarded as having more than touched the fringe of the problem of a cure for the disease.

Such brilliant success has been recently recorded in respect to the specific chemical therapeutics of infection that an effort has been, and still is being, made to attack the problem from this quarter. Here, also, only a starting point has been secured and the subject merely opened to further experimentation. The point of departure which we have adopted is the drug hexamethylenamine (urotropine), which possesses a degree of antiseptic action in the body and is known to be secreted into the cerebro-spinal liquid. When the drug is administered by mouth it can be detected by chemical tests in the liquid in a short time. When inoculation of virus and administration of the drug are begun together and the administration continued for some days afterwards, the development of the paralysis is sometimes but not always averted.

Hexamethylenamine lends itself to modifications by the addition of still other antiseptic groups to its molecule. We have tested a large number of such modifications and have found certain ones to exceed the original compound in protective power, and others to promote the onset of paralysis. This is the common story of drugs. None are wholly without some degree of injurious action upon the sensitive and vital organs of the body. But manipulative skill has already succeeded in eliminating the objectionable and improving the valuable features of drugs so that they exert their action but little upon the organs and severely upon the parasites when they become useful as therapeutic agents. This

[16] Salmon, D. E., and Smith, Theobald: Proceedings of the Biological Society of Washington, 1884-6, vol. iii., p. 29.

[17] Flexner: Boston Medical and Surgical Journal, 1911, vol. clxv., p. 709; the Harben Lectures, Journal of State Medicine, 1912, Nos. 3, 4, and 5.

[18] Swift and Ellis: New York Medical Journal, 1912, vol. xcvi., p. 53. Wechselmann: Deutsche Medizinische Wochenschrift, 1912, Band xxxviii., p. 1446.

process may be called sundering the organotropic and parasitotropic effects. Whether this can be successfully accomplished with this class of compounds cannot be predicted. But if not the quest will be transferred to still other drugs When it is accomplished the victory will be won. By whom will the victory be won, and when? Ours is the office of story-teller and not the vision of the prophet!

In giving Huxley to science the Charing Cross School of Medicine conferred a great benefit upon the world. In imbuing him with the ideals of biological science it performed an especial service for America. For in 1876 Huxley journeyed to Baltimore to deliver the address at the formal opening of the Johns Hopkins University, at which time he outlined in essence the plan of medical education which, 20 years later, was adopted and put into practice at the Johns Hopkins Medical School. The example of this wise foundation, inspired by Huxley, has acted far and wide throughout the United States as a regenerating force upon medical education.

The Bradshaw Lecture

ON

THE DIAGNOSIS AND TREATMENT OF INCIPIENT PULMONARY TUBERCULOSIS.

Delivered at the Royal College of Physicians, London, on Nov. 5th, 1912,

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SIR THOMAS BARLOW AND FELLOWS OF THE ROYAL COLLEGE OF PHYSICIANS,—William Wood Bradshaw, M.D., F.R.C.S., M.R.C.P., in memory of whom this lectureship was established by his widow, was a Member of this College engaged in general practice. It seems appropriate, therefore, that the Bradshaw lecturer should select a subject in which general practitioners are specially interested, and should endeavour to elucidate questions of diagnosis and of treatment in such a manner as shall be helpful to them in their daily work. No subject is more important to the general practitioner than the diagnosis and treatment of incipient pulmonary tuberculosis; no morbid condition more frequently claims his attention; in none is a correct diagnosis and a suitable treatment more necessary for the welfare of the patient and for the reputation of the practitioner.

NEED OF CAREFUL CONSIDERATION OF MEASURES ADOPTED.

There is at present a special need for a careful discussion of this subject, for it is now proposed to spend a large sum of public money on an organised effort to secure the effective treatment of pulmonary tuberculosis, and if possible to stamp out the disease. The patient work of the last few years, bacteriological, clinical, and social, has thrown new light on the various problems involved in the subject of tuberculosis. Never before have we had so large an army of workers, both scientific and practical, engaged in the effort to combat it. In Great Britain, in Germany, in France, and in America, the attention of the medical profession and of the public has been directed as never before to this most important matter, and there are journals entirely devoted to the consideration of tuberculosis and of everything connected with it. By these researches and discussions much valuable knowledge has been acquired, but it cannot be said that the proper treatment for pulmonary tuberculosis has been clearly and finally determined. Yet surely at this time, when a national effort is being organised, and when large contributions from the national resources are to be furnished in support of this effort, it is highly desirable that the most effective measures and (as far as possible) the least costly should be adopted, so that the greatest possible benefit may be secured, and the funds provided may be most economically administered. This unexpected but most welcome therapeutic opportunity is a call to the medical profession to consider carefully what measures they will recommend. It is ours to direct this campaign. Are we quite clear in our minds as to the precise measures which ought to be employed?

The magnitude of the task before us is evident. According to the reports of the Registrar-General for 1910 (the latest available) the deaths in England and Wales assigned to tuberculous affections in the aggregate numbered 51,317, of which 36,334 (or 71 per cent.) were attributed to "phthisis." The returns for Ireland for the same year give 10,016 deaths from all forms of tuberculous disease, of which 7527 were due to pulmonary tuberculosis. The returns for Scotland for the year 1910 are still incomplete, but the statement is made that in eight of the principal towns, comprising 38 per cent. of the population of Scotland, the number of deaths from tuberculosis was 3458, of which 2175 were due to pulmonary tuberculosis. This would approximately correspond to 9100 and 5724 respectively for the whole population. Combining these returns we have—

	Deaths in 1910— From all forms of tuberculosis.	From pulmonary tuberculosis.
England and Wales	51,317	36,334 = 71%
Ireland	10,016	7,527 = 75%
Scotland	9,100	5,724 = 63%
Totals	70,433	49,585

We may, therefore, say that about 50,000 deaths from pulmonary tuberculosis occur every year in the United Kingdom, and 20,000 more from other forms of tuberculosis.

RELATIVE INCIDENCE OF HUMAN AND BOVINE TYPES OF TUBERCULOSIS.

The pathological, clinical, bacteriological, and experimental work of the last few years has taught us that the problem of tuberculosis may be resolved into two separate problems of unequal magnitude, which arise from the action of two distinct types of the bacillus tuberculosis—the "bovine" and the "human." In an address delivered before the International Conference on Tuberculosis at Rome in April, 1912, Professor G. Sims Woodhead reported the results of the investigation of this subject by the British Royal Commission on Tuberculosis.[1] The sputum of 28 cases of pulmonary tuberculosis under treatment in hospital was examined: in 26 of these the human type of bacillus was found, in only 2 the bovine. In 14 cases of primary pulmonary tuberculosis examined post mortem the human type of bacillus was found in all, the bovine in none. In 3 cases of generalised tuberculosis, in all of which the lungs were affected, only the human type was found. In 14 cases of tuberculosis of bones and of joints the human type was detected in all, the bovine in only one. Three cases of tuberculosis of the kidney, suprarenal, and testicle yielded the human type only. But in 5 cases of tuberculosis of the bronchial glands the human type was found in 3 and the bovine in 2. Of 9 cases of tuberculosis of the cervical glands the human type was found in 6, the bovine in 3. In 29 cases of primary abdominal tuberculosis 13 proved to be of the human type, while no fewer than 14 were bovine, and in 2 instances both types were present. It is interesting to note that of the 14 purely bovine cases 10 were aged from 1–3 years, 3 from 4–5 years, and the remaining case was only 8 years old. The result of the investigation is summed up thus: In 108 cases of tuberculosis in man 84 yielded the human type only, 19 the bovine type only, and 5 both types—that is to say, 89 human to 24 bovine, a ratio of nearly 4 to 1 in the specimens examined. The bovine type, however, was found chiefly in tuberculosis of the abdominal organs, and of the cervical and bronchial glands, and even in these almost exclusively in early childhood. It appears to have very little influence in the production of pulmonary tuberculosis, and as five-sevenths of the total mortality from tuberculosis is due to disease of the lungs, it is quite clear that the complete annihilation of the bovine type of the bacillus would make very little difference to the mortality from phthisis.

The problem of the bovine bacillus is therefore almost

[1] THE LANCET, June 1st, 1912, p. 1451.

insignificant in comparison with that of the human bacillus; yet it is not to be neglected, for it is responsible for a considerable number of deaths in early life. Theoretically the problem of the bovine bacillus is easy of solution. Hygienic methods universally applied in all dairies and dairy-farms, careful selection of cows with exclusion of tuberculous animals, proper arrangements for the conveyance and distribution of milk, and the practice of sterilisation of milk by heat ought to be capable of abolishing the "bovine type" of tuberculosis in man.

But how are we to attack the "human type" of tuberculosis, which causes nearly 50,000 deaths annually in the United Kingdom from disease of the lungs, and probably at least a half of the 20,000 deaths from tuberculosis of other organs? This is a serious problem indeed, and one which might seem to be hopeless. The clue to its solution evidently lies in the predominant localisation in the lungs. If it can be conquered here the battle would be won. The crucial point of the struggle against tuberculosis in general is this: Is it possible to abolish phthisis? For if pulmonary tuberculosis could be annihilated there would be no spread of infection by means of sputum, and there would be little or no infection of other organs in the patients themselves. This, then, is the question which urgently needs consideration. For the answer we must go far back—*to the individual case of incipient pulmonary tuberculosis* and *to the individual medical practitioner* who is called upon to diagnose and to treat it. The abolition of pulmonary tuberculosis is possible on two conditions, and only on these conditions: first, that every practitioner shall learn how to detect the disease at its first appearance, long before any bacteriological evidence is available; and secondly, that a method of treatment can be employed by the practitioner, in the patient's own home, which will be simple, harmless, completely effective, and yet inexpensive. If these two conditions can be satisfied the solution of the problem is in our hands. I propose, therefore, to devote this lecture to a discussion of these two questions.

I. The Diagnosis of Incipient Pulmonary Tuberculosis.

At present the great majority of general practitioners do not feel justified in giving a definite diagnosis of incipient pulmonary tuberculosis until the bacillus has been found in the patient's sputum, either by themselves or by some acknowledged bacteriological expert. This is unfortunate, for the disease is often present for weeks or months, and may have spread extensively in the lungs, before a positive bacteriological report can be given. Much time, therefore, has been lost before systematic treatment has been undertaken. The delay caused by waiting for a positive report is responsible for a large amount of mortality.

Principiis obsta. Sero medicina paratur
Quum mala per longas convaluere moras.

A negative bacteriological report may be entirely misleading and, indeed, calamitous in its results, for it may delude the patient and the practitioner into a false sense of security, so that the disease goes on its way unchecked until its manifestations become too plain to be any longer ignored. Let the medical man constantly bear in mind that in the detection of disease absence of proof is not the same thing as proof of absence. The fact that no bacilli can be detected in the sputum is no proof whatever that they do not exist in the lungs.

Value of Percussion.

But if the practitioner, conscious of the danger of waiting for a positive bacteriological report and of relying on a negative report, proceeds to make a careful physical examination of the patient's lungs he at once finds himself in a difficulty. For if he studies his text-books to ascertain precisely how this examination ought to be conducted, if he seeks advice from those who are acknowledged to be experts in tuberculosis, if he reads the most recent monographs and articles in the medical journals, he finds that they all, with one consent, in considering the diagnostic evidence of incipient pulmonary tuberculosis, lay stress on auscultation and say very little about percussion. Yet the auscultatory signs may be very slight indeed when the percussion signs are well marked and entirely distinctive. Quite large dull areas may be present in the positions characteristic of a tuberculous infection of the lungs, and yet there may be few or no evidences of local catarrh; there may be nothing abnormal observable by the most careful auscultation, except a defect in the entry of air. We may learn much from the stethoscope, but in early microbic infections of the lungs we may learn much more by the skilled use of our own fingers. In the earliest stage of a pneumococcal invasion of the lungs, 24 or 36 hours after the initial rigor, it is usually possible by careful percussion to detect a small area of defective resonance, usually near the base of one lung, with diminished air-entry as the only auscultatory phenomenon. This condition may exist for about 24 hours, but as the consolidation of lung progresses sharp inspiratory crepitus and bronchial breathing are developed. It is not often that there is the opportunity for a post-mortem examination on a case of pneumonia in its earliest stage, but I have found in such a case the suspected area of lung collapsed, almost airless, and very full of blood.

Similarly in incipient pulmonary tuberculosis the earliest signs are local areas of dullness with defective air-entry as the only constant auscultatory phenomenon, though some catarrhal sounds may possibly be present in addition. But there is a marked difference in the rapidity of development in the pneumococcal and in the tuberculous infection of the lungs. The pneumococcal invasion is extremely rapid and often overwhelming; in six or seven days the tragedy is complete and the curtain falls. But the tuberculous invasion is as a rule very slow and insidious, as if the bacillus found great difficulty in establishing itself. For weeks or months the process may continue with very little general indication. Even cough may be entirely absent, no pyrexia may be detected, and loss of weight, malaise, flushing, or occasional night-sweats may be the only symptoms. A worker in the bacteriological laboratory at St. Mary's Hospital was found to have a varying opsonic index to tubercle, though he felt quite well. He came to me and requested me to examine his lungs. I found minimal areas of dullness with defective air-entry in the positions characteristic of an incipient pulmonary tuberculosis. He went to a sanatorium, where two months later he had a pyrexial attack lasting a week, and a few tubercle bacilli were found in his (very scanty) sputum. He remained in the sanatorium four months and gained 8 lb. in weight. I examined him again on his return, and found all the dull areas distinctly larger but quiescent. He has remained since then in good health and has done excellent and continuous work. It is, therefore, not surprising that the practitioner too often fails to detect an incipient pulmonary tuberculosis until the disease is far advanced. In the earliest stage careful and accurate percussion is required for its detection, and the text-books insist almost wholly on auscultation!

Sites of Dull Areas and Method of Percussion.

It cannot be too much insisted on that if any practitioner will acquire the habit of carefully and invariably examining the heart and lungs by accurate percussion before using his stethoscope, he will enormously increase his ability to form a correct diagnosis, and will gain invaluable indications for treatment. But at what part of the thorax may the practitioner hope to detect the earliest indications of an incipient pulmonary tuberculosis? He will naturally turn to the "apex" of the lung, and on consulting some of his authorities will be instructed to percuss above the clavicle to detect a disease which such authorities imagine to commence at the extreme summit of the lung and to advance steadily downwards. The progress of the disease has even been divided into "stages" in accordance with the distance downwards from the summit attained by the morbid process, the affection of the lower lobes being often ignored altogether in such classification. Yet it was pointed out more than 20 years ago, in a valuable paper by a distinguished Fellow of this College, Sir James Kingston Fowler, that post-mortem examination of the precise site of the earliest tuberculous lesions of the lung shows that the tuberculous process does not begin in the summit of the lung, but at a spot about an inch and a half below the summit, from which the morbid process may extend backwards and also downwards. Sir James Kingston Fowler showed that a second localisation in the outer part of the upper lobe at the same horizontal level is also extremely common, and that a third early focus is very frequently present at about an inch and a half below the summit of the lower lobe on each side.

Can we detect these local areas of incipient pulmonary tuberculosis by accurate percussion? If we are to succeed in this attempt it is essential to adopt a correct method of examination. For the investigation of the front of the chest the patient *must lie on his back on a comfortable couch*, and must be completely at his ease and with his muscles relaxed. It is impossible to obtain an accurate result from percussion of the front of the chest while the patient is standing or sitting erect; the habit of physicians to examine such patients in the erect position has been the cause of the delay in the recognition of the true picture of the localisation of an early pulmonary tuberculosis. If the patient is in the recumbent position on a comfortable couch which supplies an adequate resistance, and at the same time allows of complete muscular relaxation, it is quite easy by careful percussion to detect dull areas in the first and second intercostal spaces which correspond to the statements made by Sir James Kingston Fowler, if it be remembered that a distance of an inch and a half in the collapsed lung of the post-mortem room will correspond to a distance of two inches or more in the air-containing lung during life. Of course, it is important to adopt a proper method of percussion. Let the practitioner practise light percussion on the terminal phalanx of a finger of his left hand firmly pressed on the spot to be percussed (the rest of that hand and forearm being kept away from the patient's chest-wall). After a little careful practice of this method he will have no difficulty in determining in a case of incipient pulmonary tuberculosis dull areas in the inner and in the outer part of the first intercostal space on each side. The second and the third interspaces must then be examined in the same way, and the remaining parts of the anterior wall of the chest and also the axillary regions. For the posterior aspect of the thorax the patient should be sitting erect with his back to the practitioner; he should place his hands on the anterior aspect of the opposite shoulders, should bend gently forwards and relax his muscles. Careful percussion should then be practised over the inner and the outer parts of the suprascapular fossa on each side, and also over the posterior end of the spine of the scapula and the surrounding region. In a case of incipient pulmonary tuberculosis a dull area will be found in the inner part of the suprascapular fossa, quite close to the first and second dorsal vertebræ (a region normally resonant), which corresponds anteriorly to the dull area in the inner part of the first intercostal space. Similarly, a dull area (smaller in size) will be found in the outer part of the suprascapular fossa, which corresponds to a dull area in the outer part of the first intercostal space. Thirdly, a very definite dull area, as large as or even larger than the area first described, will be found in the upper part of the lower lobe at the extremity of the spine of the scapula.

In examining the subclavicular dull areas more carefully, it will be found that they can usually be traced downwards into the second intercostal space, being in this space smaller but nearer together than in the first space. In a severe case the outer part of the second space may be involved, and (more rarely) the dullness may extend under the anterior fold of the axilla into the axillary region. It should also be observed that though at first the dull area in the inner part of the first space extends quite up to the sternum, as the patient improves resonance begins to appear at the sternal edge and may extend from one to two centimetres, so that the focus of morbid action is situated at about a fingerbreadth from the sternum.

There are, therefore, six dull areas to be detected in the upper part of the lungs in a case of incipient pulmonary tuberculosis, two in each upper lobe and one in each lower lobe. Over these dull areas the only auscultatory phenomenon in many cases is a defect in the air-entry. Even the deepest possible inspiratory effort on the part of the patient produces very little inspiratory sound at these localities, while in the lower part of the lungs the air-entry may be much more distinct. On careful auscultation one may sometimes detect a slight crepitant sound with inspiration or with expiration also; it may or may not vanish after the patient has coughed. Occasionally the inspiration will be slightly "wavy" in rhythm; occasionally the expiration will be slightly prolonged. At this stage of the disease there is rarely any increase in the conduction of voice-sounds.

The six dull areas above described may all be present and even of considerable size, while the supraclavicular region, corresponding to the summit of the lung, may be still very fairly resonant, though the clavicle itself may yield a dull note in the positions corresponding to the dull areas below.

These six areas at the four apices are the most important and the most easily detected part of the morbid signs of an incipient pulmonary tuberculosis. They do not represent the complete picture—far from it, as I shall show presently. But they are sufficient for the diagnosis. They are, I believe, invariably present in all cases of early pulmonary tuberculosis, though in a small minority certain areas about the angle of the scapula (of which I shall speak later) may become unusually definite, especially if any pleurisy develops over them.

Diagnostic Value of Typical Dull Areas.

To prove that these typical dull areas are not produced by any other type of disease is obviously more difficult, and requires a much wider range of careful clinical observation. Yet I believe it to be the fact. The condition which may simulate them most nearly is the tendency to lobular collapse of the apices which is not uncommon in feeble children; but this condition rarely, if ever, attains to the typical symmetrical distribution of the six dull areas of pulmonary tuberculosis. An influenzal or pneumococcal broncho-pneumonia does not usually affect the apices in this definite and symmetrical fashion, and the distribution of the dull areas caused by pulmonary infarcts is very different.

Those physicians who insist on the demonstration of the bacillus in the sputum as the only proof of the reality of pulmonary tuberculosis will, of course, be sceptical as to the tuberculous nature of lesions found at so early a stage of the disease that this convincing evidence cannot be produced. Yet the exact similarity of the condition found in these early cases, which promptly respond to treatment, to that found in more developed cases in which the bacillus can be demonstrated, seems to me to make it at least highly probable that they also are tuberculous. Much more extended observation is, of course, necessary to attain to absolute certainty that these six dull areas are not produced by any other infection, but at all events it is quite clear that they justify a very strong suspicion of a tuberculous infection, present or past.

It must be carefully noted that the discovery of these six areas at the four apices does not necessarily prove that the tuberculous infection which has produced them is active at the time when they are discovered. For though they diminish in size as the patient improves, they do not entirely disappear. They may remain quiescent but detectable for many years. While preparing this lecture I had the opportunity of examining again the chest of a lady who had been under my care 11 years ago for a slight pulmonary tuberculosis. She made a complete recovery, did hard and continuous work as a nurse, and for some years as a hospital sister in a trying climate. She came to me again, not on account of her lungs, but for examination of her heart. Yet the characteristic dull areas at the pulmonary apices due to the tuberculous infection 11 years before could be detected quite easily, though there was absolutely no morbid sound to be heard over them. It is probable that these old dull areas caused by former tuberculous infection remain during the rest of the patient's life. They are no doubt in large part due to local fibrosis, small pulmonary scars. How long they may yet contain living bacilli, which may under favourable circumstances again start a morbid process, it is impossible to say. Certainly for some months after apparent recovery these areas ought to be very carefully watched, for an increase in the size of any of them may explain doubtful clinical symptoms, and may show the necessity for renewed treatment. But after a time they may certainly become completely quiescent.

It is always wise, on the first discovery of the typical areas at the four apices, to consider carefully whether there are any indications of present activity, such as tenderness, pyrexia, cough, hæmoptysis, or local crepitant sounds. Whenever any reasonable ground for suspicion of active disease exists, a week or ten days of rest in bed with continuous antiseptic inhalation should be instituted, as a precautionary measure. The result will often show that this treatment has been wise, for the active signs will subside and the dull areas will become definitely smaller.

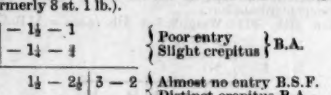
Progress of Case indicated by Periodical Measurement of Dull Areas.

When the practitioner has detected the existence of the six typical dull areas at the four apices in a case of suspected pulmonary tuberculosis, it is most important that he should *carefully measure their diameter*, and should keep a record of their size at the time of their first discovery, which can be compared with subsequent measurements made at intervals of three or four weeks. I have a large number of such records, and find them easy to make and of the greatest service in prognosis and in estimating the progress towards recovery. The size can be determined with very considerable accuracy, though not, of course, with mathematical precision. To measure them in inches or centimetres would give a false idea of the amount of exactness possible under the circumstances, and would alarm the patient by the use of tape measures. But the measure by fingerbreadths is made during the routine process of physical examination and without the patient's knowledge. The fingerbreadth is a measure which is invariable for the same observer; it is (very literally) always at hand, and it admits of quite sufficient clinical accuracy. After a little practice it is possible to estimate the size of a dull area to one-sixth or even one-eighth of a fingerbreadth, approximately equivalent to one-third and one-quarter of a centimetre.

As evidence of the truth of the statements just made I submit the following figures, obtained by myself in eight recent (unpublished) cases. The first six are very early cases, in which an X ray examination was made, so that the results of both methods of examination can be compared. The seventh case shows how a slight relapse, due to excess of exercise, gave evidence of increase in size of some of the dull areas, and how rest and continuance of the antiseptic inhalations rapidly brought about subsidence of this extension. The eighth is a much more chronic case, which has made remarkable improvement under the use of continuous antiseptic inhalation.

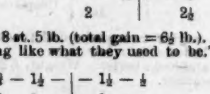
It must be explained that in each case the part of the diagram above the horizontal line presents the front view of the chest and shows the size of the dull areas in the first and second intercostal spaces, while the part below the horizontal line presents the back view of the chest and shows the size of the dull areas in the inner and outer parts of the suprascapular fossa, and at the extremity of the spine of the scapula on each side. The figures are in fingerbreadths and fractions of a fingerbreadth.

CASE 1.—Female, aged 24.—Jan. 26th, 1912 (sent by Dr. J. Ashton, of Battersea). *Only definite symptom occasional night-sweats* for nearly a year; no cough or sputum. Her brother (Case 7 below) had been under my care for early pulmonary tuberculosis and had recovered. Weight, 7 st. 12½ lb. (it was formerly 8 st. 1 lb.).

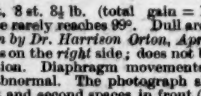


The patient was kept in bed for 10 days and she practised continuous antiseptic inhalation.

Feb. 16th: Weight, 8 st. 2½ lb. (gain = 4 lb. in three weeks). Feels and looks better; still occasional night-sweats. Temperature to 99·4° F. for 3 days, now 98·8°.



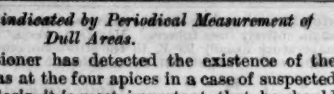
March 5th: Weight, 8 st. 5 lb. (total gain = 6½ lb.). Doing well. Night-sweats now "nothing like what they used to be." Temperature only once to 99·4°.



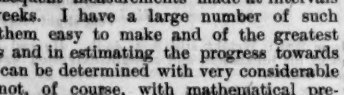
April 19th: Weight, 8 st. 8½ lb. (total gain = 10 lb.). Night-sweats slight. Temperature rarely reaches 99°. Dull areas a little smaller.

X ray examination by Dr. Harrison Orton, April 23rd.—"The screen shows slight dimness on the *right* side; does not brighten so well as the left on deep inspiration. Diaphragm movements approximately equal and not markedly abnormal. The photograph shows a definite area of mottling in the first and second spaces in front (= the fourth and fifth behind) on the *right* side; there is also some mottling (but less definite) in the fifth right space in front. The *left* upper spaces show less definite mottling, but the left root-shadow is considerably more marked than the right, and shows several very opaque areas."

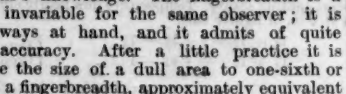
June 7th: Weight, 8 st. 10½ lb. in lighter dress (total gain = 13 lb.). Feels and looks very well. Night-sweats almost disappeared. Temperature entirely subnormal for last seven days.



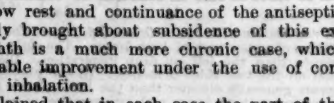
July 26th: Weight still 8 st. 10½ lb. "Not a single sweat since last visit."



CASE 2.—Female, aged 30.—March 6th, 1912 (sent by Dr. R. R Mowll, of Surbiton). Has felt weak lately and unfit for work. Pain in left side of chest came on suddenly at night five weeks ago; for the first two days it hurt her to breathe. Since then feels a chronic soreness in left axilla. No cough, dyspepsia, or night-sweats. Weight, 8 st. 1½ lb. (8 st. 2 lb. last August).

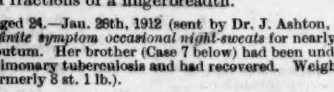

1 — 2 — | — 1½ — ¾
¾ — 1½ — | — 1 — ½
L. front slightly tender. Slight double crepitus
B.A.
1½ — 2 | 2½ — 2
2 | 2½
Poor entry B.S.F.
Very slight prolonged expiration
R.S.F. Slight crepitus B.A.-2
Also distinct friction crepitus at angle of scapula.

She was kept in bed for ten days and practised continuous antiseptic inhalation. March 27th: Left chest still rather sore. No cough. Weight, 8 st. 4½ lb. (gain = 3 lb. in three weeks).

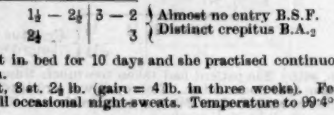


X ray examination by Dr. Orton, April 16th.—"The screen shows definite dimness of upper part of *right* lung as compared with the left. Diaphragm movements approximately equal on the two sides, but their range on both sides is well below the average. The photograph shows definite mottling on the right side, with several small opaque areas which suggest old fibrous nodules, especially in first space in front, corresponding to fourth space behind; in second space in front, corresponding to fifth space behind; and in third space in front (most marked) corresponding to seventh rib behind. On the *left side* there is only a little faint mottling lying over fourth rib behind and in first intercostal space in front; otherwise indefinite."

May 1st: No soreness during the last week. Still no cough. Weight, 8 st. 6 lb. (total gain = 4½ lb.).



June 5th: Feels well.



CASE 3.—Female, aged 23.—March 2nd, 1912 (sent by Dr. A. M. Hickley, of South Lambeth-road, under whose care she had been in August, 1911, for pharyngitis and post-nasal catarrh). At the end of November, 1911, Dr. Hickley detected evidence of tuberculosis at the right apex, and prescribed treatment by continuous antiseptic inhalation; but she was not kept in bed. Her weight on Dec. 1st was 6 st. 3 lb.; it rose gradually to 6 st. 9 lb. On Feb. 22nd 1912, a *few tubercle bacilli were found in her sputum*. Cough troublesome. Weight, 6 st. 8 lb.

The patient was kept in bed for a fortnight and practised continuous antiseptic inhalation.

March 26th: Weight, 6 st. 9½ lb. (gain 1½ lb. in three weeks). Cough not much better.

1 — 1⅝ — | — 1½ — 1
¾ — 1 — | — 1 — ⅝
Much better entry.
Some prolonged expiration R.A.
No crepitus.
1 — 1⅝ | 2½ — 1½
1½ | 2½
Entry still poor behind.
Some prolonged expiration R.S.F.
Very slight expiratory crepitus B.A.-2

X ray examination by Dr. Orton, April 2nd, 1912.—"The screen shows slight dimness at both apices, most marked at the *right* apex. Hesitating movement of the right side of the diaphragm. The photograph shows definite mottled shadowing more marked and more extensive

on the right side than on the left. The plate confirms the dimness on the right side."

April 23rd: Weight, 6 st. 10 lb. (total gain = 2 lb.).

$\frac{3}{4} - 1\frac{1}{2}$ / $\frac{1}{2} - \frac{3}{4}$ | $-1 - \frac{1}{2}$ / $-\frac{3}{4} - \frac{1}{2}$ — Entry very fair. / Slight prolonged expiration R.A. — No crepitus.

$\frac{3}{4} - 1\frac{1}{2}$ | $2 - 1$ — Entry fair R.S.F / Some prolonged expiration R.A.$_2$ — No crepitus.

$1\frac{1}{2}$ | 2

CASE 4.—Married woman, aged 35.—Sept. 3rd, 1912 (sent by Dr. G. Allpress Simmons, of Welbeck-street). "Caught cold" in July; it lasted for three weeks. Lately "brings up phlegm," and on August 29th slight hæmoptysis. No pyrexia; no night-sweats; no dyspepsia, but loss of appetite. Weight, 8 st. 2½ lb.

$1\frac{1}{2} - 1\frac{3}{4}$ / $1 - 1$ | $-1\frac{1}{2} - 1$ / $-1 - \frac{3}{4}$ — Entry poor R.A. / Slight wavy inspiration L.A. / Slight prolonged expiration L.A. — Hardly any crepitus.

$1\frac{1}{2} - 2$ | $2\frac{1}{2} - 1\frac{3}{4}$ | $2\frac{1}{2}$ | 3 — Definite slight inspiratory crepitus R.S.F. R.A.$_2$ / Slight prolonged expiration R.S.F. / L.S.F. almost normal.

The patient was kept in bed for ten days and practised continuous antiseptic inhalation.

Sept. 24th: Feels "very well." No cough except in the morning. Sputum slight. Weight, 8 st. 7½ lb.: a gain of 5 lb. in three weeks.

$1 - 1\frac{3}{4}$ / $\frac{3}{4} - 1\frac{1}{4}$ | $-1\frac{1}{2} - \frac{3}{4}$ / $-1\frac{1}{4} - \frac{1}{2}$ — Entry better R.A. / Slight prolonged expiration R.A. / Slight inspiratory crepitus L.A.

$1 - 1\frac{3}{4}$ | $2 - 1\frac{1}{2}$ | 2 | $2\frac{1}{2}$ — Slight prolonged expirations R.S.F. / Slight crepitus R.A.$_2$

X ray examination by Dr. Orton, Sept. 24th.—Screen: "Dimness and failure to brighten of upper part of *right* lung. Right lung decidedly dimmer than left. Left probably dimmer than normal. Diaphragm movements diminished on both sides (¼th of an inch less on left than on right)." Photograph: "The right lung below lower border of third rib shows definite mottled shadowing. In the left lung there is a suspicion of mottled shadowing over first intercostal space and second rib in front (corresponding to fourth and fifth spaces behind."

Oct. 22nd: Cough practically absent. Sputum very slight, but two weeks ago there was very slight hæmoptysis. None since. Weight, 8 st. 10½ lb.: a total gain of 8 lb. in seven weeks.

$\frac{3}{4} - 1\frac{1}{4}$ / $\frac{1}{2} - 1\frac{1}{4}$ | $-1 - \frac{1}{2}$ / $-1 - \frac{1}{2}$ — Almost normal.

$\frac{3}{4} - 1\frac{1}{4}$ | $1\frac{1}{2} - 1$ | $1\frac{1}{2}$ | 2 — Very slight prolonged expiration R.S.F. / Slight inspiratory crepitus R.A.$_2$

CASE 5.—Male, aged 20.—August 28th, 1912 (a patient of Dr. F. J. Lennan, of Croydon). For two or three years has had frequent "colds, which go to his chest." Cough for the last two weeks. No hæmoptysis, dyspepsia, or night-sweats. Weight, 10 st. 13 lb. Occasional loose cough.

$1\frac{1}{2} - 2$ / $1 - 1\frac{1}{2}$ | $-1\frac{1}{2} - 1$ / $-1\frac{1}{2} - \frac{3}{4}$ — Poor air-entry B.A. / Some inspiratory crepitus R.A.; less at L.A.

$1\frac{1}{4} - 1\frac{1}{2}$ | $2\frac{1}{4} - 1\frac{3}{4}$ | $2\frac{1}{2}$ | 3 — Very feeble entry. / Slight crepitus at R.S.F.

The patient was kept in bed for a fortnight, and practised continuous antiseptic inhalation. Smoking was forbidden.

Sept. 19th: "Getting on very well indeed—cough ceased very soon." Weight, 11 st. 3 lb. (gain of 4 lb. in 3 weeks).

$1 - 1\frac{1}{4}$ / $1 - 1\frac{1}{4}$ | $-1\frac{1}{2} - \frac{3}{4}$ / $-1\frac{1}{4} - \frac{3}{4}$ — Entry poor and still some inspiratory crepitus R.A. / Entry better L.A.

$1 - 1\frac{3}{4}$ | $2 - 1\frac{1}{2}$ | 2 | $2\frac{1}{2}$ — Entry poor. / Slight inspiratory crepitus R.S.F., R.A.$_2$.

X ray examination by Dr. Orton, Sept. 24th.—Screen: "Marked dimness on *right* side, especially in region of root, but quite definite all over; failure to brighten on deep inspiration. Half-inch limitation of movement of the right half of the diaphragm as compared with the left. Some slight dimness of upper part of left lung as compared with normal, but definite lightening on deep inspiration." Photograph: "Right side generally dimmer than the left, and shows some mottled shadowing, the most marked groups of shadows being in the second intercostal space in front and just below the fifth rib behind; less definite in the first space in front and just below the fourth rib behind. Shadowing on the left side is somewhat indefinite, but there is a decided suspicion of mottling in the first space in front and fourth behind."

Oct. 17th, 1912.—Very slight hæmoptysis a fortnight ago, but no pyrexia. Weight, 11 st. 9½ lb. (total gain, 10½ lb. in seven weeks). Looks and feels well. Dull areas slightly less. Very slight crepitant sound.

CASE 6.—Male, aged 25.—May 4th, 1912.—A patient of Dr. E. J. Morton, of Dulwich, who had detected evidence of tuberculosis at the left apex a week previously; the sputum was found to contain "*tubercle bacilli in moderate numbers.*" No night-sweats, and feels quite well, but has had cough since January, with "a good deal of phlegm." Smokes 3-4 oz. of tobacco weekly. Temperature 99° 8° F. at 4 P.M. yesterday, but usually 98° 4°. Loose cough. Weight, 9 st. 1½ lb.

$2\frac{1}{2} - 2\frac{1}{2}$ / $2 - 2 -$ | $3 - 2$ / $2\frac{1}{2} - 1\frac{1}{2}$ — Poor entry. / Crepitus B.A.; chiefly L.A.

$2\frac{1}{2} - 3\frac{1}{2}$ | $3 - 2\frac{1}{2}$ | $3\frac{1}{2}$ | 3 — Loose râle, blowing expiration and whisper at L.S.F. / Crepitus at R.S.F. and B.A.$_2$.

Thus he was found to have large dull areas, with suspicion of a commencing cavity at his left upper apex. He was kept in bed for a fortnight, practised continuous antiseptic inhalation, and was ordered to abstain entirely from tobacco. May 23rd: Feels "ever so much better." Temperature usually 99° F. in the afternoon, once 100°. "Cough and phlegm less." Weight, 9 st. 6½ lb. (gain = 5 lb. in three weeks).

$2 - 2$ / $1\frac{1}{2} - 1\frac{1}{2} -$ | $2\frac{1}{2} - 1\frac{1}{2}$ / $-2 - 1\frac{1}{2}$ — Entry now good. / Slight crepitus B.A.

$1\frac{1}{2} - 2\frac{1}{2}$ | $2 - 1\frac{1}{2}$ | $2\frac{1}{2}$ | $2\frac{1}{2}$ — Very slight and prolonged expiration / Very slight whisper — L.S.F. / Very slight crepitus — R.S.F. B.A.$_2$.

June 20th: Weight still 9 st. 6½ lb. He had been rather careless about his inhalation, and a slight extension was found on the right side behind.

$2 - 2$ / $1\frac{1}{2} - 1\frac{1}{2} -$ | $2\frac{1}{2} - 1\frac{1}{2}$ / $-2 - \frac{1}{2}$ — Poor entry. / Crepitus at B.A.

$1\frac{1}{2} - 2\frac{1}{2}$ | $2\frac{1}{2} - 2$ | $2\frac{1}{2}$ | $2\frac{1}{2}$ — Very poor entry. / Crepitus at all four apices. — No prolonged expiration.

July 11th: He states that there is "a wonderful improvement this time." He has inhaled persistently since the last visit. Cough much less: sputum scanty. Temperature now nearly always normal. Weight, 9 st. 6 lb. in lighter suit.

$1\frac{1}{2} - 1\frac{1}{2} -$ / $1\frac{1}{4} - 1\frac{1}{4} -$ | $-1\frac{1}{2} - 1\frac{1}{4}$ / $-1\frac{1}{4} - 1$ — Entry better. / Crepitus very faint.

$1 - 1\frac{1}{2}$ | $1\frac{1}{4} - 1$ | $1\frac{1}{2}$ | $1\frac{1}{2}$ — Ditto.

Sept. 6th: Feels "quite fit." Looks very well. Cough and sputum ceased in July, but 10 days ago there was a slight return, now better. Temperature normal. Weight now 9 st. 5 lb.

$1\frac{1}{4} - 1\frac{1}{2} -$ / $1\frac{1}{4} - 1\frac{1}{4} -$ | $-1\frac{1}{2} - 1\frac{1}{4}$ / $-1\frac{1}{4} - 1$ — Only slight pleural crepitus.

$1 - 1\frac{1}{2}$ | $1\frac{1}{2} - \frac{3}{4}$ | $1\frac{1}{4}$ | $1\frac{1}{2}$ — Very slight prolonged expiration L.S.F.

X ray examination by Dr. Orton, Oct. 1st.—"The screen shows marked dimness of upper part of both lungs. The right side appears slightly dimmer than the left on deep inspiration. Diaphragm movements equal on the two sides (2 inches). In the photograph the right side appears generally dimmer than the left. There is extensive mottled shadowing in both lungs and exaggeration of both root-shadows. On the whole, the mottled shadowing is more marked on the left side than on the right, with fair uniformity, except that it is denser over the first space and second rib (corresponding to the fourth space behind), where the appearances suggest the possibility of a small cavity."

CASE 7.—Male, aged 19.—Dec. 29th, 1910 (brought by Dr. Ashton, of Battersea). Cough for 3 months, some night-sweats 3 weeks ago. Has now a loose cough. Weight, 3 st. 1½ lb

$1\frac{1}{2} - 1\frac{1}{2} -$ / $1 - 1 -$ | $2 - 1\frac{1}{2}$ / $-1\frac{1}{2} - 1$ — Some loose crepitus, less after-cough B.A.

$2 - 2\frac{1}{2}$ | $2 - 2$ | 2 | $1\frac{3}{4}$ — Some crepitus and audible whisper at B.S.F. Prolonged respiration R.S.F.

The patient was kept in bed for two weeks and practised continuous antiseptic inhalation.

Jan. 27th, 1911: Weight, 8 st. 3 lb. (gain = 1½ lb.).

$1 - 1 -$ / $\frac{3}{4} - \frac{3}{4} -$ | $-1\frac{1}{2} - 1$ / $-1 - \frac{3}{4}$

$1\frac{1}{2} - 1\frac{1}{2}$ | $1\frac{1}{2} - 1\frac{1}{2}$ | $1\frac{1}{2}$ | $1\frac{1}{2}$ — Crepitus R.S.F., but no prolonged expiration.

Feb. 24th: The patient had taken too much time for exercise and had walked four hours a day. The result was a relapse, which showed itself in loss of weight (8 st. 2 lb.), a temperature of 100° F., and an increase in size of all his dull areas.

$1\frac{1}{2} - 1\frac{1}{2} -$ / $1 - 1\frac{1}{2} -$ | $1\frac{3}{4} - 1\frac{1}{2}$ / $-1\frac{1}{2} - 1$ — Some crepitus / Wavy inspiration — L.A

$2\frac{1}{2} - 2$ | $2 - 1\frac{1}{2}$ | 2 | $1\frac{1}{2}$ — Crepitus R.S.F., also at B.A.$_2$

He was again kept in bed for two weeks, and practised persistent inhalation. The pyrexia lasted only a few days.

March 24th: Feels and looks better. Weight, 8 st. 3 lb. (has regained the lost lb.). Areas smaller.

$1 - 1 -$ / $\frac{3}{4} - 1 -$ | $-1\frac{1}{2} - 1$ / $-1\frac{1}{2} - \frac{3}{4}$

$1\frac{1}{2} - 1\frac{3}{4}$ | $1\frac{1}{2} - 1$ | $1\frac{3}{4}$ | $1\frac{1}{4}$

Sept. 27th: Has done his work for three months. No cough for a month past. Weight still 8st. 3lb.

$\frac{3}{4} - \frac{3}{4} -$ / $\frac{1}{2} - \frac{3}{4} -$ | $-1\frac{1}{2} - \frac{3}{4}$ / $-1 - \frac{1}{2}$

$1\frac{1}{2} - 1\frac{3}{4}$ | $1\frac{1}{2} - 1$ | $1\frac{1}{2}$ | $1\frac{1}{4}$

On July 26th, 1912, this patient was reported to be quite well and in full work.

CASE 8.—Female, aged 30.—Jan. 25th, 1912 (a patient of Dr. Pedler, of

Knightsbridge). More or less cough for several years. Some night-sweats and much weakness more than a year ago, but she had made a great effort to remain at her work. Night-sweats three or four times a week for the last three months. Weight, 8 st. 7½ lb. (last August she weighed 9 st. 7 lb.). Frequent short cough.

2 — 2½	— 2 — 1½	Poor entry B.A.
1½ — 1⅔	— 1½ — 1½	Moist crepitus and prolonged expiration R.A. Slight crepitus L.A.
2 — 2½	3 — 2½	Entry almost absent B.S.F. and B.A.$_2$
2½	3	Faint crepitus R.S.F.

Dr. Pedler reported that "*the bacillus is present in fair numbers.*" The patient was kept in bed for a fortnight, and practised continuous antiseptic inhalation.

Feb. 16th: Feels able to take longer breaths. Temperature 99·2° to 99·8° F. in the evening (once it rose to 100°, once even to 104·2°. Weight, 8 st. 12 lb. (gain = 4½ lb. in three weeks). Cough much better.

1½ — 2 —	— 1⅔ — 2	Entry better.
1½ — 1½ —	— 1½ — 1	Some prolonged expiration and crepitus R.A.; less at L.A.
1½ — 2	2½ — 2	Entry much better, but still poor at R.S.F., with some prolonged expiration. Distinct crepitus B.A.$_2$
2	2½	

March 15th: Feels "ever so much better—no comparison"! Cough much better. Sputum "less than half of what it was." Temperature has been not above 98·6° since Feb. 16th. Weight, 9 st. 3 lb. (total gain = 9½ lb. in seven weeks).

1½ — 1⅔ —	— 1½ — 1½	Double moist crepitus. Slight prolonged expiration R.A.
1 — 1½ —	— 1½ — 1	
1½ — 1⅔	2½ — 1½	Ditto at R.S.F.
2	2½	Poor entry and slight crepitus B.A.$_2$

April 25th: Weight, 9 st. 10 lb. (total gain = 16½ lb. in 13 weeks).

1½ — 1½ —	— 1½ — 1	Auscultatory signs as before.
1 — 1½ —	— 1 — ⅔	
1 — 1½	2½ — 1½	
1⅔	2⅔	

Thus far the patient had made remarkable progress. Unfortunately, her surroundings were now unsatisfactory, and she was the subject of much mental anxiety. The result was a loss of weight, and more definite signs of cavity at her right apex. After some weeks she obtained admission into a sanatorium, where she was allowed to continue her antiseptic inhalation.

These cases are sufficient to prove that it is easy to measure the size of the six typical dull areas at the four apices in incipient pulmonary tuberculosis with sufficient accuracy to give a very valuable guide to diagnosis and to prognosis. The practitioner will soon find the advantage which he will derive from a careful observation of them.

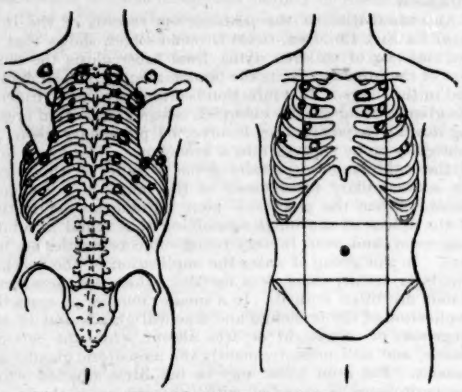


Diagram showing the distribution of the dull areas in incipient pulmonary tuberculosis.

He will do well at first to confine his attention to these six areas, for the complete localisation of an incipient pulmonary tuberculosis is much more extensive and complicated. So far as I know, it has never been described in detail, and it is therefore necessary to point out the many other positions on the chest wall where small dull areas may be detected in an early case, in addition to the six already described. (See Figure.)

Other Dull Areas.

On the anterior wall of the chest a small dull area can always be discovered by careful percussion in the third intercostal space on each side, above the nipple or somewhat more internally; and further out in the same space there is on each side a dull area below the anterior fold of the axilla. On the right side, internal to and below the nipple (in the region of the middle lobe of the right lung), there is a very definite dull area, with resonance between it and the border of the right auricle (which normally extends a finger-breadth outwards into the fourth space, and in these cases of early pulmonary tuberculosis sometimes as much as a fingerbreadth and a half). Nothing corresponding to this area can be detected on the left side, for in this position there is the dullness due to the heart. But on both sides there is a small dull area in the anterior part of the axilla at about the level of the fourth space or fifth rib. Posteriorly, there is always a dull area at the angle of the scapula on each side, and another a little externally, in the posterior axillary region. When the infection in this region extends to the surface of the lung and sets up a local pleurisy, as is not uncommon, these two areas unite into one, especially if any pleural effusion occurs. If the patient improves and the effusion is absorbed the dullness diminishes, and the two separate areas can again be distinguished. But if the pleural effusion increases it may produce a large area of dullness, with defect of air-entry, vocal resonance, and vocal fremitus.

If the horizontal line through these two areas be prolonged towards the spine a third area is met with on each side near, but not close to, the spine. These areas also are very constant. At a slightly higher level there is an interesting difference between the two sides, for on the left side a dull area is found at the posterior edge of the scapula, about two fingerbreadths above the angle, while on the right side the position of the corresponding area is not at the scapular edge, but always nearer to the spinal column, in about the sixth space. This is a remarkable and invariable difference, which evidently depends on the different anatomical division of the lungs into three lobes on the right side and two on the left. Furthermore, in the upper part of the back on each side three small separate dull areas can often be detected in the positions shown on the diagram, and below the angle of the scapula there are also several dull areas detectable in positions which are arranged in a kind of regular pattern, and are marked on the diagram.

This remarkable grouping of small dull areas may usually be detected by careful percussion in quite early cases of pulmonary tuberculosis. Their relative positions are practically invariable. From their scattered and symmetrical distribution and from the slight differences between the two lungs which I have described, it seems clear that they must correspond to the ultimate distribution of the bronchial tubes in their most direct course. The dullness and lessened air entry are probably caused by multiple local centres of infection giving rise to local collapse, followed by local broncho-pneumonia of a very chronic type, and finally fibrosis.

Of these dull areas the largest are always the six at the apices, as previously described. For the apical region is the least expanded in ordinary respiration, and in a tuberculous infection of the lung (especially if it at all implicates the pleura) there appears to be a reflex inhibition of respiration, just as the diaphragm movements are checked by even a local peritonitis. In an early stage of pulmonary tuberculosis the fluorescent screen will often show a marked limitation of the inspiratory movement of the diaphragm, sometimes unequally on the two sides. There can, I think, be no doubt that a similar reflex inhibition of the other inspiratory muscles is common in pulmonary tuberculosis. Every physician must have observed how difficult it is to induce such patients to take a long deep breath and thoroughly to expand the chest. This failure of expansion in its turn makes the local conditions more favourable for the development of the tubercle bacillus—another instance of a "vicious circle" in disease. Thus the morbid process develops more rapidly in the apical areas, and these areas are the most prone to soften down into irregular cavities.

Results of X Ray Examination.

It is important to ascertain whether the results obtained by percussion in incipient pulmonary tuberculosis are or are not confirmed by X ray examination of the chest.

Segnius irritant animum demissa per aurem
Quam quæ sunt oculis subjecta fidelibus.

"Ὥτα γὰρ τυγχάνει ἀνθρώποισι ἐόντα ἀπιστότερα ὀφθαλμῶν."

I have been able to make some comparative observations

on this point through the kindness of my friend and colleague Dr. Harrison Orton, medical officer in charge of the X ray Department at St. Mary's Hospital, and honorary secretary of the Electro-Therapeutical Section of the Royal Society of Medicine, the excellence of whose work in this department is well known. The results obtained by the X ray examination in the cases quoted are given in Dr. Orton's own words. By comparing these results with the percussion results we find that the X ray examination (1) confirms the existence of morbid changes in the lungs in each case; (2) confirms the statement as to which lung was the more affected; (3) confirms, in the more affected lung, the localisation in the upper intercostal spaces; (4) shows in the less affected lung either nothing definite, or very slight changes, in the upper part of the lung; and (5) reveals opaque areas about the root of the lung which are inaccessible to percussion. Thus the radiographic examination gives a confirmation of the percussion results which is complete up to a certain point, and which is very welcome. In does not, indeed, reveal quite so much of the early changes as may be ascertained by careful percussion, but it seems to be capable of showing the existence of some morbid condition in any case where the percussion evidence is positive, though slight. It is therefore most useful, provided that the examination be made by a skilled expert, employing all the most recent advances in "technique." In one respect the X ray examination has a decided superiority to percussion, for it can reveal changes about the root of the lungs, opaque areas and radiating lines due in all probability to chronic morbid changes in root-glands and to peribronchial and perivascular fibrous thickening. Yet these chronic changes may in any case be possibly very old, absolutely quiescent, and may form no part of the really active morbid process. All who have worked in a hospital for children know how very frequently the tracheal and bronchial glands are found to be caseous even in an autopsy which shows little or no other evidence of tubercle. If such children had survived they would probably have had to their dying day fibrous glandular relics which could be shown by the X rays.

Dr. A. C. Jordan, of Guy's Hospital, has recently[1] pointed out the extreme frequency of chronic tuberculous changes in glands at the root of lungs passed as "healthy" in the post-mortem room. He states that in 25 such cases out of 36 "there were gross deposits of calcareous matter in the bronchial glands or elsewhere; in the rest there were small calcareous fragments, and in many there was a large excess of fibrous tissue arranged in thick strands or sheaths around the main branches of the bronchi." Sections showed typical tuberculous broncho-pneumonic patches with small round cells and large endothelioid plates, extensive tracts of dense fibrous tissue, and calcareous patches. But the very fact of the commonness of such changes in connexion with lungs which are found to be practically healthy on autopsy shows how easy it is to attach too much importance to the "root-shadows" and to the radiating lines indicating the position of thickened bronchial tubes and blood-vessels, and how readily even a skilled X ray examination may mislead. We should naturally expect that these fibrous and calcareous masses would be specially opaque to the X rays, and would therefore be specially prominent in the radiograph, whereas the commencing areas of tuberculous infiltration of the finest bronchial tubes and alveoli would be much more transparent, and would show in early cases only a fine "mottling," the true significance and importance of which might be easily overlooked.

In examining an X ray photograph of the thoracic organs to detect indications of such mottling and to compare the exact position of such indications with the results obtained by percussion, it is necessary to bear in mind that in such a photograph the anterior intercostal spaces are projected on to the posterior, in such a way as greatly to confuse the picture. Much care is required to disentangle them. Thus in Case 1 above, the mottling was found in a position corresponding to the first and second spaces in front and the fourth and fifth spaces behind. Similarly in Case 2 the mottling was found in the first space in front corresponding to the fourth space behind, and in the second anteriorly and fifth posteriorly, while another area in the third space in front corresponded to the seventh rib behind. Thus the large dull area found by percussion over the upper part of the lower lobe and situated at about the fourth rib posteriorly is confused in the radiograph with the areas in the first and second spaces anteriorly, which are due to foci of infection in the upper lobe. And the effect of this projection varies according to the angle which the photographic plate makes with the patient's chest wall when the negative is taken, which will be different in well-developed chests from what it is when the chest is ill-developed.

Hence it is clear that very great care is required in the interpretation of the radiographic picture. It shows much which is probably of little present importance, it shows less distinctly the earliest indications of active mischief, which may be more distinctly detected by careful percussion, and it confuses the localisation. Further advance in technical skill will, no doubt, minimise these difficulties, yet it will remain true that the highest expert opinion in the matter will be necessary for trustworthy conclusions, and that this will naturally involve expense. On the other hand, it is also true that percussion must be at its best if it is to be superior to the X rays, and that the inadequate attention at present given to this method of examination by most practitioners of medicine is the cause of a very large amount of failure in diagnosis. A practitioner who does not feel able to rely on his own percussion will do well to obtain an X ray picture taken and interpreted by an expert. But a practitioner who has learned to trust his own percussion does not need radiography to enable him to arrive at a sound conclusion.

Pathological Process.

It is clear from the percussion results already stated in this lecture, and from the X ray findings which confirm them, that an incipient pulmonary tuberculosis consists in the carriage of tubercle bacilli, almost certainly by inhalation, to the finest bronchial tubes and alveoli in areas scattered freely over the lungs, followed by morbid changes which advance more rapidly in the upper part of both upper and lower lobes. From these infected areas the morbid process advances along the lymphatic sheaths of the bronchial tubes and of the blood-vessels till it reaches the glands—pulmonary, bronchial, and tracheal. It seems to be possible in young children for the bacilli to make their way to these glands without any apparent implication of the pulmonary tissue. Probably this is due to the greater freedom and activity of the lymphatic circulation in early childhood.

An examination of the post-mortem records of the Hospital for Sick Children, Great Ormond-street, shows that in the majority of children dying from tuberculosis the chief seat of the infection is in the bronchial and tracheal glands and in the lungs. This infection is often extremely virulent, the glands being greatly enlarged, caseous, and often breaking down; frequently they involve the pulmonary tissue by contiguity or by rupture into a bronchus. (The lower lobe of the right lung is specially prone to suffer in this way.) An acute miliary tuberculosis of the lungs is a frequent result. When the process is more chronic an implication of the apices of the lungs resembling that found in adults may occur, and even in very young subjects cavities are not rare. In this group of cases the implication of the cervical glands is usually much less marked, while the mesenteric glands are often normal. In a smaller number of cases the implication of the bronchial and tracheal glands and of the lungs may be very slight or even absent, while the cervical glands, and still more frequently the mesenteric glands, are caseous. But even these may be but little affected while the peritoneum is crowded with tubercles, as if the bacilli made their way through the intestinal wall, leaving little or no trace of their passage, just as happens in the lungs.

The first group of cases are almost certainly due to inhalation of bacilli of the "human type," while in the second group the infection appears to enter by the alimentary canal. Probably these are often due to the "bovine" bacillus.

In adults the local chronic tuberculous changes in the lungs are much more commonly observed than in children, and the implication of the glands is much less marked and much less virulent. Also the spread of tuberculosis along the lymphatic sheaths of the blood-vessels until the cerebral meninges are attacked is much less common in adults than in children. But both in children and in adults the disease begins, not at the root of the lung, but in the finest bronchial

[1] Brit. Med. Jour., August 31st, 1912.

tubes and in the alveoli, in scattered areas which show a characteristic localisation.

To sum up this long discussion, I would claim that the first of my two questions may now be answered in the affirmative. It *is* possible for any general practitioner of medicine, by the adoption of a correct method of examination and the exercise of a little care and patience, accurately to diagnose the existence of an incipient pulmonary tuberculosis long before any bacteriological evidence can be obtained. It is not necessary for him to wait for a positive bacteriological report, and he will be foolish indeed if he allows a negative report to shake a diagnosis which is founded on an accurate physical examination. The possibility of a correct diagnosis is, in more senses than one, *in his own hands.*

II.—THE TREATMENT OF INCIPIENT PULMONARY TUBERCULOSIS.

In the minds of the majority of the medical profession the question as to the proper treatment of pulmonary tuberculosis seems to be answered by the one word "sanatorium," to which some are now inclined to add (relying on the confident assertions of its advocates) the word "tuberculin." But with regard to the employment of tuberculin there is still acute controversy as to whether it ought to be employed in small or in large doses, whether the grave symptoms which may follow its employment are due to it or to "mixed infection," and whether it ought to be used only when the patient is kept at rest and under skilled supervision, or may be given to patients who are allowed to pursue their ordinary occupations.

It is quite certain that sanatoria have been extremely useful, and that by their help many patients have been restored to health. Yet it must also be sorrowfully confessed that many patients who have lived in a sanatorium for six months, at a very considerable cost, are still not completely cured, and that numerous instances of subsequent relapse occur, so that in the minds of many practitioners there is a growing scepticism as to the curative value of sanatoria. And when we consider the matter carefully we see that though the treatment by absolute rest, abundance of fresh air, and abundance of nutriment places the patient under the most favourable circumstances for fighting his battle with the invading bacilli, *it does not include any organised attack on the bacilli themselves.* It is the consciousness of this that has led many to desire to make trial of tuberculin. But is there no simpler and less dangerous method of direct attack? Is it quite certain that ordinary antiseptic drugs are of no value in the treatment of pulmonary tuberculosis? On the contrary, it is quite certain that some cases have markedly improved under the use of large doses of creosote. Of late the value of injections of a preparation of which iodine appears to be the active agent has been prominently advocated in France. And a letter in the *British Medical Journal* from a practitioner who had been using tuberculin and whose supply was exhausted related that he had substituted injections of carbolic acid and had obtained better results. But creosote by the mouth is apt to cause much disturbance of the organs of digestion, while hypodermic injections are apt to be painful, and require the most scrupulous precautions against sepsis.

Treatment by Continuous Inhalation of Antiseptic Vapours.

Why not administer these antiseptic drugs by a method of inhalation? Too many physicians reply, "Because we cannot see how such a method can be of service." Some even go so far as to say, "Because it cannot possibly do any good." But is such scepticism justifiable? If a patient inhales a combination of antiseptic vapours *persistently*, day and night (except when actually taking food), by the principle of diffusion of gases the antiseptics *must* make their way into the pulmonary alveoli, if the inhaler be worn for a sufficient length of time. This is surely indisputable. And if antiseptic drugs like creosote, carbolic acid, and iodine are dissolved in alcohol, ether, and chloroform, there must be a gradual absorption of these anæsthetic agents into the blood, for this is an A.C.E. mixture, and we know that if used in greater strength it would prove the absorption by producing general anæsthesia. The slow absorption of these agents in a very dilute condition must carry with them into the blood the antiseptics dissolved in them. How these may be transformed in the blood it is for physiological chemistry to determine, but it seems likely that some antiseptic influences will thus be carried by the blood-stream to the tuberculous foci, which will then be attacked both from without the lungs and from within.

Certain other properties of this combination of drugs deserve attention. First, with regard to the alcohol, we have learned from the remarkable observations of Professor Collingwood and Dr. W. H. Willcox how much the stimulating and tonic effect of oxygen given by inhalation is increased by passing the oxygen through absolute alcohol. Dr. Willcox has calculated the amount of alcohol absorbed and finds it to be very small, yet it exercises a most remarkable influence, as has subsequently been proved by administering oxygen bubbled through alcohol in cases of cardiac failure. The effect of the continuous inhalation of an antiseptic mixture in which alcohol is the solvent must therefore be a tonic and stimulating influence constantly at work. Another constituent of the mixture, ether, will act similarly and perhaps more strongly. Lastly, chloroform has a local sedative influence and strongly tends to diminish cough. I therefore recommend, and have constantly employed, the following formula for a solution to be used for continuous antiseptic inhalation.

℞ Creosoti 3ii
Acidi Carbolici 3iii
Tinct. Iodi 3i
Sp. Ætheris 3i
Sp. Chlorof. 3iii
} = 3i

Menthol and formalin appear to me too irritating, and unsuitable for continuous inhalation.

Whether my argument from theoretical considerations does or does not produce conviction in the minds of my hearers, the final appeal must be to the results of experience. If the results of experience can be shown to be satisfactory, theoretical objections will soon be swept away. For we must always remember that however fascinating a scientific or apparently scientific basis for treatment may be, our most trusted remedies are the product of empirical observation. Quinine, opium, digitalis, mercury, and sodium salicylate are triumphs of empiricism. Medicine is both a science and an art; both must be cultivated with equal care and accuracy. For the art to ignore the science is stupid: for the science to neglect the art is suicidal. The medical science which has any real claim to the name cannot be confined to the laboratory and its products; it must be constantly in touch with an ever-increasing accuracy of clinical investigation. The results of treatment which claims to be "scientific" must be tested, not simply by the assertion of the patient that he is "better" (have we not all heard of the *spes phthisica?*), but by diminution of pyrexia, of cough, and of sputum, by increase in weight, and by careful observation and record of the physical signs. I therefore ask your careful consideration of the results recorded in the table of 70 cases treated with the formula above stated (pp. 1286-87) which have been already published in the medical journals.[3] The most recent of these cases ceased treatment a year ago. The table shows in each case: (1) the gain in weight during the first three weeks; (2) the total gain in weight; (3) the effect on the cough; (4) the effect on the sputum; (5) the effect on the physical signs; and (6) the result as to permanent capacity for work. The present condition of each case in October, 1912, with very few exceptions, has been ascertained by letters directed to the patient or to the medical man who sent him. The answers have been pleasant reading, for they have shown the most satisfactory results in nearly all cases, and they have been full of gratitude. Out of the 70 cases published there are:—

Complete recoveries	48	
Probably complete recoveries	3	
		51
Cases incompletely cured	10	
Final result not known	2	
Died	7	
Total		70

Of the 10 incompletely cured, 9 have improved remarkably; 1 has deteriorated. Of the 7 deaths, 1 was due to apoplexy after recovery from the lung disease, 1 was hopeless when first seen, 2 abandoned treatment, 1 died from hæmoptysis, 1 from abdominal tuberculosis, and 1 from tuberculous meningitis.

[3] Cases 1-30 in British Medical Journal, Dec. 11th, 1909; Cases 31-50 in THE LANCET, Nov. 19th, 1910; Cases 51-70 in British Medical Journal, April 6th, 1912.

TABLE GIVING SEVENTY CASES OF PULMONARY TUBERCULOSIS TREATED BY CONTINUOUS ANTISEPTIC INHALATION.

Number.	Sex and years of age.	Stage when first seen.	Lungs.	Tubercle bacilli.	Gain in weight in pounds.		Cough.	Sputum.	Physical signs.	Result (October, 1912).
					First 3 weeks.	Total.				
1	F., 19	Early, acute.	L. more than R.	—	Loss.	20	—	None.	Rapid improvement.	Recovery. No further information (hospital case).
2	M., 33	Early.	,,	Many.	—	30	Rapid diminution.		,,	Quite well, and in active work for 5 years.
3	M., 34	Very acute, after removal of caseous cervical glands.	R. more than L.	None, but many strepto-cocci.	—	52	,,	,,	Early formation of basic cavity followed by rapid improvement.	Quite well, and in active work for 5 years.
4	M., 33	Incipient.	,,	—	—	14	,,	,,	Rapid improvement.	Quite well, and in active work for 5 years.
5	M., 13	,,	L. more than R.	—	4	23	None after a few days.		,,	Quite well, and in active work for 5 years.
6	F.	,,	,,	—	3½	8½	Slight.	None.	,,	Well, though not robust; in active work for 4½ years.
7	F.	,,	R. more than L.	—	2¾	30	,,	,,	,,	Quite well, and in active work for 4½ years.
8	F., 28	,,	L. more than R.	—	*Nil.*	1	,,	,,	,,	Quite well 2½ years later. No further information.
9	M., 50	Incipient (H.).	R. more than L.	—	—	—	,,	Slight (H).	,,	Quite well, and in active work for 4½ years.
10	F., 38	Chronic (cavity).	L. more than R.	—	4	12	Much less.	Much less.	Gradual improvement.	Quite well, and in active work for 4½ years (had a course of tuberculin treatment later).
11	F., 17	Early	R. more than L.	—	—	6+	Slight.	None.	Improved. Slight relapse later.	2 months later "much better." No further information.
12	M., 25	,,	,,	None.	2½	9½	Ceased in 1 week.	Slight.	Steady improvement.	Quite well, and in 'active work for 4½ years.
13	M., 36	Incipient	L. more than R.	,,	—	5	—	Scanty.	Rapid improvement.	Quite well, and in active work for 4 years.
14	M., 19	Early (H.).	R. more than L.	—	1	—	Slight.	Slight (H).	,,	Well, and at work for 2 years. Not seen again. *Died* 15 months ago.
15	M., 15	Early.	,,	—	7	20	Lost in 2 weeks.	Scanty.		Quite well. In Australia 2 years. At work 1 year.
16	M., 20	,,	,,	—	—	3¾	None.	None.	Slight but definite improvement.	Quite well, and in active work for 4 years.
17	M., 26	Chronic (cavity)	,,	—	—	18½	Rapidly lessened.		Steady improvement.	Very great improvement but still a cavity when last seen 2½ years ago.
18	M., 40	Early (H.).	,,	—	3½	8½	,,		Rapid improvement.	Quite well, and in full work for 3 years.
19	F., 18	Incipient.	L. more than R.	—	—	2½	Slight.	None.	,,	,, ,, 3 years.
20	F., 22	,,	,,	—	2	6	Rapidly improved	Slight.	,,	Quite well—married and in "splendid health"—3 years.
21	M., 36	Early (H.).	R. more than L.	Present.	Lost ½ lb.	29	Rapid improvement.		,,	Quite well, and in full work—3 years.
22	M., 38	Incipient.	,,	—	4	9	Vanished in one week.	None.	,,	,, ,, 3 ,,
23	M., 32	Early, acute (H.) (four cavities).	,,	Many.	—	19	Improved rapidly.	Scanty.	Four cavities gradually healed (had some tuberculin injections later),	,, ,, 2½ ,,
24	F., 13	Early.	L. more than R.	None.	—	25	—	,,	Rapid improvement.	,, ,, 3 ,,
25	M., 37	Early (cavity).	R. more than L.	—	5½	27	—	None.	Rapid improvement (cure of cavity).	,, ,, 3 ,,
26	M., 42	Incipient (H).	L. more than R.	—	9	26	Slight.	Slight.	Rapid improvement.	,, ,, 3 ,,
27	F., 34	Early (H) (cavity).	R. more than L.	—	—	3½	Soon lost.	None.	Slow but steady improvement (cavity healed).	Fairly well, and does her housework—3 years.
28	M., 9	Early.	,,	—	—	7	Improved.		Gradual but complete recovery.	Well; at school—3 years.
29	M., 28	Early (cavity).	,,	—	7	14	,,		Improvement delayed by foul teeth.	Quite well, and in full work—3 years.
30	M., 30	Early, acute (cavity) (H.).	,,	—	—	21	Rapid improvement		Rapid improvement (cure of cavity).	,, ,, 2½ ,,
31	M., 69	Early (H.) and pneumothorax chronic alcoholism.	L. more than R	—	—	—	Used inhaler for 6 weeks and improved rapidly.			,, ,, 2 ,,
32	M., 38	Incipient (with malaria).	,,	None.	—	9	Slight.	Slight.	Steady improvement.	Well and in full work—2½ years
33	M., 39	Late (H.).	R. more than L.	—	—	Loss 3 lb.	Less.	Less.	Gradual improvement.	Improved. No H. or pyrexia for 18 months.
34	M., 30	,,	L. more than R.	—	—	7	,,	,,	Steady improvement.	"In good health and able to do my work."
35	F., 31	Chronic (with colitis).	R. more than L	—	—	7½	,,	,,	Slow improvement.	Wintered in Switzerland; came back worse. Since then, slow deterioration.
36	F., 53	Chronic.	,,	—	—	9	,,	,,	Definite improvement.	Recovered. *Died* 8 months later from apoplexy.

Table giving Seventy Cases of Pulmonary Tuberculosis treated by Continuous Antiseptic Inhalation—(continued).

Number.	Sex and years of age.	Stage when first seen.	Lungs.	Tubercle bacilli.	Gain in weight in pounds.		Cough.	Sputum.	Physical signs.	Result (October, 1912).
					First 3 weeks.	Total.				
37	F., 28	Very late.	L. more than R.	*	—	—	Less.	Less.	Distinct temporary improvement.	Remarkable improvement for 6 months. *Died* after 1 year. Post-mortem: only lower half of right lung capable of function.
38	F., 23	Incipient.	R. more than L.	—	3	8½	Ceased in 1 week.	Slight.	Rapid improvement.	Well, and did full work (now married)—2 years.
39	M., 29	,,	,,	—	6½	—	Ceased quickly.	None.	,,	Well, and did full work—2 years.
40	M., 47	Early, acute (with nervous prostration).	R. equals L.	—	—	9½	Rapid improvement.		Slow improvement.	Complete recovery of lungs. Gradual recovery from the nervous weakness. Has now resumed clerical work.
41	M., 23	Early (H.).	R. more than L.	Present.	—	4½	Soon ceased.	Soon ceased.	Rapid improvement.	Quite well, and in full work—2 years.
42	F., 35	Incipient (with hay-fever.)	,,	—	4	9	,,	,,	Distinct improvement.	"General health excellent." Still gaining weight, but temperature still 99·4° F. in afternoon.
43	F., 31	Early.	,,	—	2	6½	Less.	Less.	Definite improvement.	*Died* a year later. "Quite intractable, and went her own way in defiance of all advice."
44	M., 28	,,	,,	Many.	—	14½	Much less.	Much less.	Rapid improvement.	Relapsed. *Died* (*hæmoptysis*) a year later.
45	M., 6	Incipient.	L. more than R.	None.	—	—	Lost in 10 days.	None.	Distinct improvement.	Quite well, and at school—2 years.
46	F., 30	Early.	R. more than L.	,,	6	10	Rapidly lessened.		Rapid improvement.	No reply to inquiry (probably travelling).
47	M., 21	Early (with tuberculous arthritis of knee).	R. equals L.	—	—	—	Rapid relief.	Soon lessened.	Rapid recovery of lungs. Gradual recovery of knee.	Afterwards, psoas abscess and spinal caries, which were cured by surgical treatment. Mr. Warren Low reports him now as "perfectly well, with a stiff knee."
48	M., 29	Chronic (3 or 4 cavities).	L. more than R.	—	—	12	,,	,,	Steady improvement.	Much improved. Able to work. No cough or pyrexia. Still has cavities.
49	F., 26	Early.	R. more than L.	Present.	5	16	,,	,,	Rapid improvement.	Quite well, and in full work—2 years.
50	F., 22	,,	,,	,,	—	—	,,	,,	Steady improvement.	"Has done well and increased her weight, but tubercle bacilli still present and some moist sounds."
51	M., 26	Late (cavities).	L. more than R.	—	Loss 1 lb.	Loss.	"Very much better."	"Very much less."	Temporary improvement though method used imperfectly.	*Died* a year later from tuberculous meningitis.
52	M., 25	Chronic (cavities).	,,	—	—	14	Much less.	Much less.	Marked improvement though method used imperfectly.	"I have been better this year than last." Looks and feels well. Still a chronic cavity.
53	M., 52	Incipient.	,,	Present.	—	21	Soon ceased.	Slight.	Rapid improvement.	Quite well, and in full work—1½ years.
54	M., 33	Early (H.).	,,	—	1½	28	Improvement for 7 weeks; then hæmoptysis; then steady improvement.		Gradual improvement.	Well, and in full work—1½ years.
55	M., 52	Incipient (with mitral stenosis).	R. more than L.	—	5	12½	Ceased at once.	Slight.	Rapid improvement.	Quite well, and in full work—1¾ years.
56	F.	Early (X ray) (2 months in sanatorium).	L. more than R.	None.	3	8	Almost none.	Very slight.	,,	Well, and fully occupied—1½ years.
57	M., 23	Early (H.).	R more than L.	Present.	5	7½	Ceased at once.	Slight.	Gradual improvement.	Large hæmorrhage 7 months later. Again recovered and gained weight. Now working 5 hours a day, and "holding his own."
58	M., 19	Incipient.	L. more than R.	—	1½	1½	Much better.	Scanty.	Rapid improvement.	Quite well, and in full work—1½ years.
59	M., 44	,,	R. more than L.	—	6	6	Soon ceased.	Soon ceased.	Distinct improvement.	Recovery of lungs. Apoplectic attack 11 months later, followed by right hemiplegia.
60	F., 29	,,	,,	—	4	6	,,	,,	Rapid improvement.	Quite well, and in full work—1½ years.
61	F., 27	,,	,,	—	—	3½	,,	,,	,,	,, ,, 1½ ,,
62	M., 19	,,	,,	Many.	5	11	,,	,,	,,	,, ,, 1 year.
63	F., 13	Early (with abdominal tuberculosis).	,,	—	—	—	,,	,,	Distinct improvement.	Relapsed and *died* six months later.
64	F., 45	Incipient.	,,	—	6	6	,,	,,	Rapid improvement.	Quite well, and in full work—1½ years.
65	M., 22	,,	L. more than R.	None.	3	3½	,,	,,	,,	Well, and in full work—1½ years.
66	M., 17	,,	R. more than L.	—	—	14	,,	,,	,,	Well, at school—1½ years.
67	F., 26	,,	,,	—	—	13	,,	,,	,,	Quite well. Since married and one child.
68	F., 22	,,	,,	—	—	2½	,,	,,	,,	Quite well and fully occupied—1½ years.
69	F., 39	Early (small cavity) and asthma.	,,	—	1	4	Rapidly improved.		,,	Still has asthma, but can do her household work.
70	F.	Incipient	,,	—	5	8	Soon ceased.	None.	,,	Quite well, and in full work for nearly 1 year.

* Had been treated with tuberculin injections weekly for six months.

In 19 of the cases in this table a bacteriological examination of the sputum was made. The results were as follows:—

—	Cases.	Recovered.	Chronic.	Died.
No tubercle bacilli present ...	8	8	—	—
Tubercle bacilli found in 10:				
Small or moderate number	6	4	2	—
Many	4	3	—	1
Totals	18	15	2	1

In one case (after removal of tuberculous cervical glands) no tubercle bacilli were found in the sputum, but many streptococci. The rapid gain in weight shown in this table is worthy of notice. The gain in the first three weeks of treatment in 33 cases shows an average of 3·8 lb., the total gain in weight in 59 cases an average of 12·4 lb. In every one of the 70 cases both lungs were found to be affected; but in almost all one lung was more affected than the other, though the difference was usually slight. In only 2 cases the right and left lungs were about equally affected. In 44 cases the right lung was more affected than the left; in 24 cases the left lung was more affected than the right. Thus in this list of 70 cases the right lung was chiefly attacked nearly twice as often as the left.

Results obtained by Various Observers.

The idea of administering antiseptic drugs by the air-passages in cases of phthisis suggested itself to physicians 30 years ago. In 1877 the late Sir William Roberts claimed good results from the use of antiseptic inhalation by means of a "respirator-inhaler" which covered the mouth only, and which he directed to be "worn for fifteen, thirty, or sixty minutes several times a day." Dr. Coghill also employed a similar apparatus, and directed that the patient should inspire through the mouth and expire through the nose, each such period of inhalation to last from 15 to 20 minutes. To Dr. Burney Yeo we are indebted for the invention, in 1882, of the simple inhaler of perforated zinc which has proved of such great value. It is still being made as Dr. Yeo recommended, but it has been found advisable (with Dr. Yeo's consent) to increase the size a little for cases with more prominent noses. This model is known as Yeo's inhaler (M), the original type being described as Yeo's inhaler (F); they are made by Squire and Son, 413, Oxford-street.

When Dr. Hassall, in 1885, doubted the value of drugs given by inhalation, Dr. Wilson Fox (*olarum et venerabile nomen*) replied:[4] "The antiseptic effect has been doubted by Hassall, *but there can be no question* that inhalations practised in this manner, with creosote, thymol, eucalyptus, iodoform, iodine, or terebene, tend to diminish cough and expectoration, and that in some cases marked improvement in the patient's state occurs during their use, even in very advanced stages." This statement by Dr Wilson Fox may be commended to the careful consideration of physicians who are sceptical as to the value of such inhalations.

During the last 30 years the method of treatment thus initiated has been adopted with success by a few physicians, among whom special mention must be made of Dr. Beverley Robinson, of New York, who has followed the recommendations of Dr. Yeo, and made use of similar solutions for inhalation for many years. He has published numerous papers on the subject, in which he has given evidence of the value of this method of treatment in cases of phthisis, and especially in laryngeal tuberculosis.

For several years past Dr. Muthu, of the Mendip Hills Sanatorium, has made much use of antiseptic inhalation in the treatment of phthisis by means of solutions of menthol and formaldehyde employed for six or eight hours daily. He finds such inhalations very useful, and has published papers in support of this method of treatment. Dr. Garry, of Cairo, has also published good results, and I am informed that as long as 10 or 12 years ago the late Dr. Huggard, of Davos, ordered antiseptic inhalation day and night continuously, with complete success, in a case known to my informant.

[4] Diseases of the Lungs, p. 884.

Method of Inhalation Treatment.

For the last seven years I have treated all my cases of pulmonary tuberculosis (except some seen in consultation at a very advanced stage) by the method of continuous antiseptic inhalation, by means of a Yeo's inhaler and the antiseptic solution of which the formula is stated above. In adopting this plan of treatment it seemed to me that certain conditions were necessary if the greatest possible amount of benefit was to be obtained.

1. The inhalation *must be continuous*, the inhaler being worn all day and all night, except at meal-times.

2. At the beginning of the treatment a *period of rest in bed is essential*. The importance of this in the treatment of tuberculosis is well understood in sanatoria. In addition, the compulsory rest directs the patient's attention to the necessity for careful and thorough use of the method.

3. Digestive disturbances, anorexia, and diarrhœa or constipation must be treated by appropriate drugs.

4. The patient must be supplied with a *sufficiency of easily digested food*. Malted milk dissolved in (scalded) milk given at the end of each of the four meals has proved invaluable for this purpose.

5. *Careful disinfection of the mouth* with equal parts of Sanitas fluid and water four times daily, after the milk, has been always ordered. As soon as the patient has begun to make definite progress carious teeth should be stopped or removed. Antiseptic sprays may be used for unhealthy conditions of the fauces, and a spray of cocain, eucalyptus, and parolein to relieve any nasal obstruction.

6. *Smoking* must be absolutely forbidden.

These are the principles on which the 70 published cases were all treated.

I advise, therefore, that whenever a practitioner has reason to suspect that a patient is infected with incipient pulmonary tuberculosis, and has by careful percussion detected the presence of the six characteristic dull areas at the four apices, he should carefully note the size of these areas, the morbid sounds present, and the patient's weight; and at once order a period of rest in bed for 7, 10, or 14 days according to the extent of the dull areas and the acuteness of the symptoms. Two Yeo's inhalers (each costing only 6*d*. or 1*s*.) should be procured, so that they may be used on alternate days and may be properly cleansed by immersion in boiling water and careful drying.

The solution of which the formula has been already mentioned should be supplied, and the patient instructed to pour six to eight drops on the felt of the inhaler *every hour* during the daytime, and once or twice during the night if he happens to wake. Nearly all patients soon become accustomed to wearing the inhaler at night. The object should be to keep the piece of felt constantly saturated with the solution, but so that none of it wets the framework of the inhaler itself. The base of the inhaler should be carefully wiped before it is applied, and a little vaseline or lanolin cold cream smeared over the nostrils and upper lip at first.

By simple precautions like these, with the use of an inhaler of proper size, any irritation of the skin of the nose or lips may be avoided. The possibility of such irritation is the only disadvantage of the method, and it may be avoided if careful instructions are given at first. The inhaler must be worn persistently and removed only at meal-times. After the first day or two the patient, while in bed, may read, write, do hand-work, or play simple games. Dyspepsia and anorexia may be treated with sodium bicarbonate, nux vomica, and a vegetable bitter given a quarter of an hour before meals three times daily. The patient should be encouraged to eat freely of plain nutritious food, and at the end of each of his four meals he should drink slowly a half-pint of fresh milk which has been raised to the boiling-point and allowed to cool, and to which two teaspoonfuls (gradually increased to a tablespoonful) of malted milk has afterwards been added. The bedroom windows should, of course, be kept open, but the patient must be kept warm in bed and protected from draught. After his meals he should always rinse his mouth with equal parts of Sanitas fluid and water. Smoking must be absolutely forbidden. When the necessary period of rest in bed is at an end the patient may be allowed to sit up in his room, still wearing the inhaler persistently. Two or three days later he may be allowed to lay it aside for an hour in the morning and take a short walk out of doors. But when he returns he must at

once replace his inhaler. At the end of three weeks the practitioner should again weigh his patient and again carefully record the size of his dull areas. Almost invariably a considerable gain in weight, often from 3 to 5 lb., will be discovered, and the size of the dull areas will be found to be definitely smaller. Cough will be much diminished—in many early cases it ceases altogether; sputum will be less and more easily expectorated; and the temperature chart will be more satisfactory. The patient generally feels so much better that he is quite willing to continue the treatment. He should now be instructed to practise simple breathing exercises three times daily in order to obtain a better expansion of the lungs. The inhalation treatment should be continued persistently (except for an hour in the morning) during the next four weeks, at the end of which time the weight should again be taken, and the size of the dull areas carefully ascertained and recorded. If the progress of the case has been satisfactory during the first seven weeks it may now be possible to reduce slightly the number of hours of inhalation, but such reduction should be very gradual. The danger at this period is that the patient, feeling himself better, should grow careless. If he does, there is a considerable chance of a relapse, which will necessitate a return to bed for a fortnight with continuous inhalation. Experience shows that the patients who are most conscientious and persevering in carrying out the treatment improve most rapidly and are least liable to relapse. A very early case may perhaps be able to return to ordinary life after three or four months of treatment, but one in which cavitation has occurred will need six months or longer. After apparent recovery the patient will do wisely to use his inhaler for one or two hours daily, and also at night, for a further period of six months. Whenever he is conscious of having "caught cold" he should remain in bed for a day or two days, and practise continuous inhalation all the time.

This treatment by antiseptic inhalation can be carried out in the patient's own home if the hygienic and sanitary conditions are satisfactory. It is not usually necessary to send the patient to a sanatorium, so that there is a great saving in expense, and the practitioner does not lose charge of him. But where the home conditions are unsatisfactory it will be wise to send him to a sanatorium at which he will be permitted to carry out the treatment by inhalation. No idea of change of climate or foreign travel or sea voyage should be entertained until he has been through a course of inhalation treatment, and even then he must take his inhaler with him and use it freely.

I now venture to claim that my second question, as well as the first, may be answered in the affirmative. It *is* possible to provide the practitioner with a simple, inexpensive, and very effective form of treatment which can be used in the patient's own home.

If every practitioner of medicine learned how to diagnose accurately at a very early stage the fact of incipient pulmonary tuberculosis, and treated it at once according to the method which I have described, it is quite certain that a very large diminution in the mortality from pulmonary tuberculosis could be effected within a very few years, and it would not be too much to hope that when the attention of the profession everywhere had been thoroughly aroused and the intelligent coöperation of all medical men completely secured, we might even see the dawn of a day when the disease formerly known as pulmonary phthisis had become a thing of the past. May that day come soon!

UNIVERSITY OF LONDON: FACULTY OF MEDICINE.—A meeting of the faculty was held at the University on Nov. 1st, the Dean, Dr. Sidney Martin, being in the chair. Dr. Reginald Cecil Wall was elected secretary to the faculty. The constitution for 1913 of the boards of studies with which the faculty is concerned was decided, as was also the constitution of the board of the faculty for the remainder of 1912. A report of the board of studies in hygiene and public health for the provision in London for the post-graduate teaching of hygiene and public health was presented and after some discussion referred to the board of the faculty for report. The election of Dean of the faculty for the period 1912–14 then took place. The following nomination had been received: Sir Alfred Pearce Gould, K.C.V.O., M.S., M.B., F.R.C.S., proposed by Professor Sir Rickman J. Godlee, seconded by Dr. H. P. Hawkins, and supported by Mr. H. J. Waring. Sir Alfred Pearce Gould was unanimously elected.

THE TREATMENT OF UNILATERAL CATARACT.[1]

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BY "unilateral cataract" I mean cases of cataract in which only one eye is affected, or in which the other eye, if not absolutely normal, has sufficient vision to enable the patient to carry out his ordinary duties. It is not always easy to decide what is the best treatment of these cases; I shall put before you the principles which guide me in my own practice. I do not propose to deal with cases in which other parts of the eye than the lens are seriously diseased, but to confine my remarks to cases in which such disease is so slight or quiescent as in itself to offer no decided contra-indication to some form of cataract operation.

The cases are best divided into two great groups according to the age of the patient, for, speaking generally, the indication is to operate in cases of unilateral cataract in the young and not to operate in the adult or aged.

Let us first consider the main advantages which may be expected to accrue to the patient from successful operation. Perhaps the greatest, for reasons which will be apparent from the sequel, is restoration of the full field of vision. The field of useful vision of the cataractous eye is practically abolished. Moving objects on the side of the affected eye are only seen by turning the head so that the nasal field of the other eye is brought into play. This may be a matter of very great importance, especially to working people who have to gain their living. They may have to work in the midst of machinery in motion in close proximity to rotating wheels and bands. Any defect in the field of vision may be a serious menace to life and limb. So, too, people who have to move about in the crowded thoroughfares of a great city are much handicapped, and may even run serious risks, if they are visually unconscious of the approach of vehicles on one side.

Next as regards central vision. If the patient had originally little or no error of refraction he will with the aid of a strong convex lens have his central vision restored. This might *a priori* be regarded as a much greater asset than mere improvement of the field of vision. In reality it is not so. The operation results in a high degree of anisometropia or inequality in the refractive conditions of the two eyes. Now it is well known that when the vision is corrected with suitable glasses under these conditions, so that each eye separately has excellent vision, the patient finds it impossible to wear the glasses and they are soon discarded. This fact depends partly upon the difference in size of the retinal images in the two eyes, a difference so great that the images cannot be fused, but probably to a still greater degree upon the unequal prismatic effects of the correcting lenses when they are looked through obliquely, as occurs when the eyes roam from side to side. Moreover, the normal muscle balance of the eyes is interfered with. Hence it is not to be anticipated that after the operation the patient will be able to wear a cataract glass. The affected eye will, therefore, be practically useless for central vision, and no particular gain accrues in this respect. It is true that if the cause of the cataract is of a nature likely ultimately to produce a like effect in the other eye operation places the first affected eye in a condition to take up the visual function at the earliest moment. This must be considered an advantage, but generally one to which too much weight must not be attached. It is true, too, that central vision is improved in the eye by operation even if a cataract glass is not worn, but this, far from being an advantage, is often a positive disadvantage. The improved vision acts as a disquieting feature, actually tending to obscure the clarity of vision in the sound eye. Thus even the uncorrected anisometropia proves worrying and disconcerting, so that patients, far from being grateful for the results of the operation, are much dissatisfied.

Next to be considered is the cosmetic effect. It will

[1] A paper founded on a clinical lecture delivered at the Royal London (Moorfields) Ophthalmic Hospital on Oct. 12th.

naturally be assessed at a different value by different individuals. The pupil of an eye with a mature or hypermature cataract is white and unsightly, at once attracting attention to the deformity. There are cases in which this is a matter of profound discomfort and annoyance to the patient, interfering in various ways with his, or perhaps more commonly her, happiness and well-being. It may even be a factor of prime economic importance in the working classes. The Employers Liability Act has had one deplorable result—viz., that a man with any defect or deformity finds it extremely difficult to obtain employment. It is scarcely to be wondered at, and hardly to be blamed, that efforts are made to render defects less patent. Hence, though of no very high order morally, the cosmetic effect of the restoration of a black pupil must be taken into account as a material advantage of operation in these cases.

Disadvantages other than those already touched upon are for the most part technical, and as they vary in different types of cases they will best be considered under this heading.

First let us take cataract in the young. The prepotent factor influencing the question of operation in these cases is the fact that the juvenile lens possesses no hard nucleus. The operation generally indicated is therefore one involving no great risk to the eye. The types of cataract which have to be dealt with are two—congenital or early infantile and traumatic. Congenital and early infantile (lamellar) cataracts are only occasionally unilateral. Patients with unilateral cataract, in which the whole of the normal pupillary area is occupied by the opaque lens, often tend to develop a squint. In children it is usually convergent. In them it probably does not depend fundamentally upon the cataract. Probably in the cases in which squint develops there has been an inherent tendency to squint—perhaps only an otherwise latent strabismus. The defective vision in the affected eye decides the manifestation of the squint and the eye which shall take up the abnormal position. In adults the tendency is for the affected eye to become divergent as a rule. Now the improvement of central vision by operation, even though the refraction be not corrected, often suffices to prevent the development of the squint, and is the more potent the earlier the operation is performed.

Besides the disadvantage of the development of squint in the young in many cases the cataract will become hypermature if left alone. It will then be much less amenable to operation, which will be attended with greater difficulties and dangers. Some congenital and lamellar cataracts are slowly progressive, and though the indications for operation may not at first be imperative they become so later.

For these reasons, therefore, it is generally advisable to operate upon unilateral cataract in the young, and it remains to discuss the operation of choice. Almost invariably it is discission. In uncomplicated traumatic cataracts and in most unilateral congenital and lamellar cataracts needling is attended with very little danger and with an excellent result. There are various ways of needling. Some surgeons advocate a very free needling of the capsule, followed in a few days by evacuation of the swollen lens matter through a linear incision. My experience, especially as a pathologist, has taught me that the few cases of needling which go wrong do so as the result of the curette evacuation. It is excessively rare for an ordinary needling to become infected or otherwise give rise to anxiety. I therefore advocate repeated needlings in these cases, using every precaution to avoid the necessity of evacuating the contents of the anterior chamber through excessive swelling of the lens matter and consequent increased intraocular tension. The only objection to this method is that it takes a longer time than the bolder line of action, but time is usually of little importance in young children compared with increased safety.

Occasionally one meets with a unilateral congenital nuclear cataract in a child. When the pupil is dilated a broad rim of clear lens is seen around the opacity, and vision is improved. In these cases the question of an optical iridectomy arises instead of discission. If successful it will have all the advantages of discission, and will in addition preserve such accommodation as the deformed lens is capable of, while preventing the operative anisometropia. The cases which are suitable for optical iridectomy are very few. In the first place it is essential to be sure that the cataract is not progressive. I have once done an optical iridectomy in such a case with an excellent immediate result, only to find in the course of months that the whole lens was slowly becoming opaque, eventually necessitating needling. In such cases one should wait several months, keeping the pupil dilated with atropine meanwhile so as to get the maximum of vision possible without operation. If then there is no sign of spread of the opacity it may be justifiable to do an optical iridectomy.

After 20 to 30 years of age one is liable to have grave difficulty with the nucleus of the lens if discission is employed. Hence the problem of the treatment of unilateral cataract assumes an entirely different aspect. A severer method of treatment, attended with greater difficulties and dangers, both immediate and remote, has to be faced. The cataracts which come under consideration are senile, traumatic, and complicated.

The senile cataracts are usually those in which one eye is much in advance of the other, though the latter is affected also in some degree, and will almost certainly progress. The general considerations already detailed lead me not to operate in these cases unless the field of vision is of prime importance to the patient (*vide supra*), or the appearance of the eye prevents the patient from earning his living. On the technical side there is one potent indication for operation, and that is the appearance of signs of hypermaturity. The thickening of the capsule which attends this process and other changes occurring in the lens substance which cannot now be enumerated add so much to the dangers and difficulties of extraction that they justify early interference. Curiously enough, patients with unilateral cataract are often extremely importunate in favour of operation, though this element should not, of course, be allowed to bias the surgeon. He will be the more chary of operating when he remembers that the interference with the vision of the other eye may even necessitate covering the operated eye with a ground glass. If operation is undertaken the method employed will be the ordinary one which the surgeon favours, since the cataract is usually nearly, if not quite, mature. When undertaken for cosmetic purposes iridectomy must be avoided if possible, a fact which most surgeons will regard as an additional contra-indication to be given its due weight.

In traumatic cataract there is often injury to other parts of the eye, and each case must be considered on its merits. By "complicated" cataract I mean opacity of the lens which has arisen without obvious cause or in which there is some general disease, such as diabetes, or some local disease to which the cataract is secondary, such as iridocyclitis. It is very rarely justifiable to operate on these cases; hence it is of the utmost importance that the urine should be examined in every case and a careful search made with the corneal loupe for keratic precipitates ("k.p.") on the back of the cornea. "K.p." is an absolute contra-indication to interference.

I have only sketched briefly the chief arguments in deciding this important problem. Many cases have their own peculiar and individual features, and it is unwise to lay down hard-and-fast rules.

Queen Anne-street, W.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST.—The festival dinner of this institution will be held on Nov. 21st at Fishmongers' Hall at 7 P.M. This hospital is the second largest of the metropolitan hospitals for consumption, and contains 175 beds, besides attending annually to some 12,000 out-patients. The sum required to be collected annually in connexion with the dinner is £3000, for the total income needed each year is upwards of £11,000. The income from investments amounts only to the insignificant sum of £550, and the yearly subscriptions still leave a considerable deficit. The nation cannot afford to lose the energetic work of the voluntary hospitals, at present at any rate, even in view of the efforts being made by the Government through the National Insurance Act; for it is evident that a considerable time must elapse before those measures can become operative, and any cessation or abridgment of present endeavour to check the scourge of consumption would necessarily result in an enormous advantage to the enemy, rendering the task of the ultimate assault immeasurably harder. A generous response is therefore confidently looked for.

HEMI-HYPERTROPHY OF THE BODY WITH NÆVUS AND VARICOSE VEINS.

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A GOOD example of this remarkable and rare disease was recently admitted to the Manchester Residential School for Crippled Children.

The patient is a girl 7 years of age, who was admitted on account of genu valgum due to rickets. There is situated over the lower part of the trunk on the right side an extensive nævus. (Fig. 1.) The nævus is of the ordinary port-wine stain type, quite superficial, not raised above the surface, and showing a very sinuous outline with two or three outlying splashes of similar nævoid skin. It is entirely confined to the right side and does not cross the middle

FIG. 1.

Side view of patient.

line at any point. The nævus is congenital and, excepting for an increase commensurate with the growth of the child, does not appear to have extended since birth.

The girl shows asymmetry of the body in a marked degree, due to overgrowth of the side on which the nævus is situated. There is slight but distinct asymmetry of the two halves of the skull and face, and the palpebral fissure is noticeably wider on the right side. The right upper extremity is distinctly larger than the left; the difference is especially marked in the hand. There is hardly any inequality in the two halves of the thorax, but the right side of the pelvis is larger than the left. Hypertrophy of the right side is, as the illustration shows, most marked in the right lower extremity, which from the iliac crest down to the toes is much larger than its fellow. (Fig. 2.) Measurement of the two limbs gives the following figures:—Total length: right, 20 in.; left, 19 in. Circumference of thigh: right, 16 in.; left, 14½ in. Circumference at level of knee: right, 10¾ in.; left, 10 in. Circumference of calf: right, 9⅛ in.; left, 7½ in. The patella of the right side is distinctly larger than that on the left, and the disparity of the feet is well shown in Fig. 3.

Radiographic examination of the lower extremities shows that the asymmetry involves the bones equally with the soft parts, but there is no difference in structure or density of the bones, and the changes due to rickets are equally marked in each limb, although it is interesting to note that to the eye the rachitic changes are more pronounced on the right side than on the left. The skin of the affected limb is normal, excepting for the varicosities to be mentioned later.

FIG. 2.

Front view of patient

No increase in the secretion of sweat or sebaceous matter has been noticed; there is no abnormal growth of hair, and the nails are normal. The increase in the circumference of the limb appears to rest mainly with the subcutaneous tissue, which is increased in large pads and rolls. This overgrowth is especially marked in the calf, and the subcutaneous tissue is here compressible to an extent which suggests a con-

FIG. 3.

Showing disparity of feet

siderable nævoid element in its structure. The muscular power of the right limb is good, but is in no wise better than its fellow.

There are scattered over the abdomen and the front of the thigh numerous small patches which consist of very delicate convoluted venules, and in a few instances present a bright red arterial appearance. The majority of these patches have undergone no change for some months, but others are evanescent and show a tendency to the formation of small subcutaneous hæmorrhages, which are subsequently absorbed with complete disappearance of the varicose patch.

The association of localised hypertrophy with nævus and varices, though rare, appears to form a definite clinical entity. The disease, when fully developed, presents three features, of which the nævus is congenital, the hypertrophy also congenital but more apparent as growth develops, whilst the varices appear later, and in some instances of the disease are small or entirely lacking. The interesting association of the three conditions, no less than the striking deformity that they produce, has given rise to a fairly considerable literature on the subject, and this literature is almost entirely of French origin. The first mention of the disease which I have been able to find is by J. Adams, who reported a case in THE LANCET of August 7th, 1858. This case, which is reported without comment as a curiosity encountered in the course of casualty work, was evidently a typical specimen of the disease. The first important reference is the research of Trelat and Monod on Asymmetry, which appeared in 1869. This was followed by papers by Leblanc (1897), Duplay (1898), and by a very complete article by Klippel and Trenaunay in 1900. Grimaud took the disease as the subject of a Paris thesis in 1901.

A study of this literature shows that the association of nævus, local hypertrophy, and varicose veins is a definite one which has been encountered in all parts of the body. It has, however, been met with most frequently in the lower extremities, and very curiously the reported cases refer, almost without exception, to the right side.

The main features of the disease are as follows. The nævus is usually superficial but very extensive, with an irregular, sinuous contour. However large the area of the nævus may be it is always sharply limited by the middle line, and several cases are on record in which the nævus was arrested at the scrotal raphe. The localised overgrowth of the part is usually most apparent in the bones, and has affected the bones of the skull, face, upper and lower extremities. The bones are increased in all dimensions, and the disparity of the two sides has amounted to difference of as much as four inches in the length of the lower limbs. The coexistence of dilated superficial veins is remarkable, since varicose veins are very rare in childhood. The varices vary much in number and extent in different cases, and are the least constant of the three chief features of the disease. They are usually superficial and small, seldom attaining the proportions seen in the varices of adults.

Whilst the hypertrophy, nævus, and varices constitute the three classical signs of the condition, there are often found other phenomena which are of interest as indicating the far-reaching nature of the congenital fault. The skin of the hypertrophied parts is in some cases thick, rough, and dry, the condition amounting at times to an ichthyosis. The hair may be abundant and coarse in texture. The nails of the affected limb have been described as deformed, showing furrows along their length. Excessive secretion of sweat and of sebaceous material has been a striking feature of some cases. The subcutaneous tissue and the muscle have usually shared in the overgrowth of the affected part.

The origin of the disease is unknown. Many theories, ranging from maternal impression to vaso-motor paralysis, have been offered in explanation, but a review of them merely confirms the opinion that the origin of this disease is one of the many mysteries in the field of ante-natal pathology.

Manchester.

A CASE OF MENINGITIS

IN WHICH THE ONLY ORGANISM THAT COULD BE CULTIVATED FROM THE CEREBRO-SPINAL FLUID DURING LIFE WAS A BACILLUS OF THE PROTEUS GROUP.

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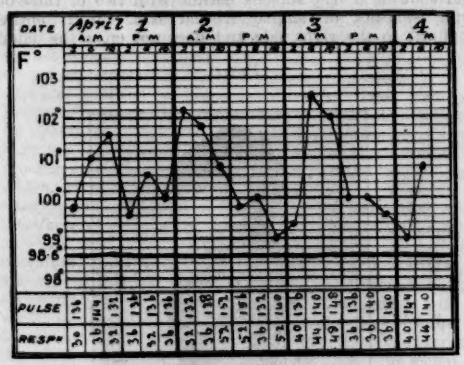
THE following is a brief abstract of the notes in this case, to which are appended the post-mortem and clinical pathological reports.

The patient, a male child, aged 9 months, was admitted to the East London Hospital for Children on March 31st, suffering from stiff neck of two days' duration. The mother noticed it when she bathed the child. He could not keep his food down—vomited it at once. He emitted a peculiar squeal during most of the night. The child had not been well since he began teething three months before. The bowels were constipated. The mother noticed that he used "to work his eyes a lot at night." She thought this was due to fits. There was nothing of importance in his previous history. With regard to the family history, four children were alive out of seven. Two died from bronchitis and croup and one from epilepsy. The father and mother were healthy.

On admission the child was well nourished, pale, and very drowsy; the head was retracted. There was marked rigidity of the neck. Kernig's sign suspicious on both sides. Abdominal reflex increased on the left side, less marked on the right. Knee-jerks were present. Fontanelle was not bulged. Discs were normal. Lumbar puncture, *nil*; three attempts, no fluid. On April 3rd rigidity was more marked. Head was very retracted and abdomen sunken and soft.

FIG. 1.



Temperature Chart.

Abdominal reflexes slight. On the 4th he was very rigid. 10 c.c. of spinal fluid were drawn off on April 3rd. Smear showed bacilli, some of which were intracellular, but most extracellular. Fontanelle bulged this morning; much worse. The patient died.

Abstract of the Post-mortem Report.

Brain: The entire surfaces at the vertex and base were covered with a thick layer of greenish-yellow pus, and the ventricles were also dilated and contained pus. The cerebral tissue was sectioned in all directions without finding any evidence of a localised abscess. Spinal cord: This thick greenish-yellow pus stripped away with the membranes and formed a layer nearly a quarter of an inch thick. Lungs: Emphysematous. Liver: Cloudy swelling and fatty change. Intestines: Both the large and small intestine showed patches of enteritis with injection and swelling of the mucous membrane.[1] Middle ears: The middle ears on both sides contained pus. The right more than the left. The cerebro-spinal fluid: This was withdrawn under aseptic precautions by Dr. A. G. Hamilton in a sterile tube and carried to the laboratory, where an examination was made immediately. The fluid was obtained some time before death on April 3rd; it was very turbid, and contained large numbers of bacilli. Most of the organisms were extracellular, but a fair proportion were seen to be inside the cells in stained film preparations. A differential count gave 93 per cent. of polymorphonuclear cells. Bacteriology: Pure cultures of the organism were obtained on agar. The bacilli varied in length and short forms were present. Gram-negative. Agar plate: Greyish white colonies, discrete, with a surrounding foggy haze which gradually spread over the plate. Neutral red agar plate: No growth. Litmus mannite: Acid; no gas. Litmus maltose and litmus lactose: Diffuse turbidity. No acid or gas. McConkey: No change. Litmus milk: Slight acidity. No clot in seven days. Gelatin slope: Rapid liquefaction of medium (in 18 hours). Broth: Diffuse turbidity. In maltose and lactose growth was fair, but film preparations from the McConkey tube showed that the organism had died out. The growth on gelatin was examined by Gram's method, and Gram-negative bacilli were found present in pure culture. Since a slight greenish tinge was observed in the exudate post mortem the possible presence of B. pyocyaneus had to be considered, although neither the tint of the colonies on agar nor the odour of the broth cultures was in the least suggestive. A peptone water culture incubated for a week gave a totally negative result.

Instances of meningitis in which bacilli, other than B. tuberculosis, figure in the cerebro-spinal fluid during life are distinctly uncommon. The recognised infective agents are as follows.

1. *The typho-colon group.*—The presence of a Gram-negative bacillus rapidly liquefying gelatin at once excludes this family with its many bacteriological complexities, including B. paratyphosus A and B with the other members of the Salmonella group. The acid and gas-forming powers of B. proteus in the litmus sugar media are very variable,

[1] These lesions may be of some importance in view of the bacteriological findings.

and in certain examples agree closely with a typical B. coli, while in others mere turbidity or only acid formation without gas is found. The "fogging" of agar and bile salt plate media is rather characteristic of the organism; as a rule, it grows well on both neutral red agar and on Conradi Drigalski plates, but I have notes of two instances in which a urinary B. proteus failed to grow on a neutral red and on a Conradi Drigalski plate respectively. Not much attention is given to the cultural features of B. proteus in most of the standard bacteriological text-books. Mr. G. H. Pearson has reported a case of B. coli meningitis. The child was an in-patient of this hospital, under the care of Dr. A. M. Gossage. Mr. Pearson also collected one or two parallel instances from the literature. Very recently Dr. E. Bellingham Smith and Dr. A. W. G. Woodforde have reported a case; they give references to the literature, and also refer to Mr. Pearson's article in THE LANCET. Both the typhoid bacillus and the B. enteritidis of Gaertner have been found in the cerebro-spinal fluid during life, and the diagnosis confirmed by cultural investigations.

2. *Friedländer's pneumobacillus.*—This organism is also a recognised cause of bacillary meningitis. The bacillus, though Gram-negative, does not liquefy gelatin, and produces in stab cultures on that medium the characteristic round-headed nail formation. It is, moreover, an active fermenter of the litmus sugar media. A point of resemblance to B. proteus is its tendency in cultivations to form long rods as well as to exhibit short forms.

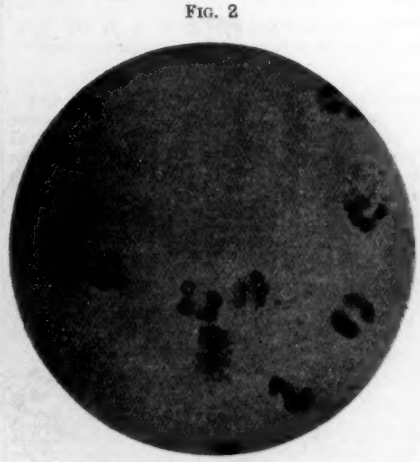
3. *Influenza bacillus.*—In 1892 Pfühl first demonstrated the presence of Pfeiffer's bacillus in the meningeal exudate; it was obtained post mortem from an adult, and also cultivated during life from the cerebro-spinal fluid of a child. Since the organism is grown with difficulty on media other than glycerine and blood agar, soon dies out, and refuses to grow on media at 22° C., it is excluded. It moreover produces very small, translucent, fine colonies on suitable media. According to Klein it can only be kept alive on gelatin by incubating at 37° C., thus producing an artificial liquefaction.

4. *Leptothrix associated with tubercle bacillus.*—As regards the latter organism, the bacillus with which we are dealing was Gram-negative and possessed no acid-fast properties. A few long bacilli were present, but nothing like a filament, and most of the organisms were short. In his leptothrical case Dr. Bellingham Smith found a turbid cerebro-spinal fluid exhibiting an intense polynuclear leucocytosis and which yielded on culture a very actively motile organism. Subsequently it was proved that the colonies consisted of filaments up to 100μ in length, and also of short actively motile bacillary forms. Both forms were Gram-negative, but repeated attempts to separate them failed. Growth was obtained on gelatin at 20° C. without liquefaction.

Agglutination reactions.—A tube of blood was obtained shortly before death, centrifuged, and tested. A filtered emulsion of the organism in 0·85 per cent. salt was free from clumps and showed no tendency to agglutinate; the organisms were non-motile. The usual technique of the Widal reaction was followed, with the result that the patient's own serum agglutinated the organism from his cerebro-spinal fluid well in dilutions of 1 in 10 and 1 in 20, and less well up to 1 in 30. The patient's serum in a dilution of 1 in 10 was entirely without action on B. typhosus, B. paratyphosus, or B. coli. My own serum, that of the laboratory attendant, and of a nurse failed to react on the organism from the cerebro-spinal fluid in dilutions higher than 1 in 8, 1 in 5, and 1 in 5 respectively. The duration of the illness at the time these tests were applied was between a week and 10 days, according to the history obtained. There was thus evidence that the patient had elaborated agglutinins in his serum during life against the organism isolated also during life from his cerebro-spinal fluid. A case of very chronic otorrhœa, under the care of Mr. W. Girling Ball, in which the B. proteus was cultivated, happened to be examined more recently, when it was found that the patient's serum possessed no agglutinative properties for his own organism. In the Croonian lectures for the present year Mr. L. S. Dudgeon refers to certain proteus exudates prepared from rabbits injected with B. proteus. On injection of these exudates into rabbits intraperitoneally the animals developed active agglutinins in their serum for B. proteus.

Pathogenicity.—It is sometimes a little difficult to convince those who are not laboratory workers that the B. proteus possesses pathogenic properties. This is probably owing to the well-known saprophytic properties of the organism and its frequent appearance as a secondary infection in chronic otorrhœa or contaminated wounds where a drainage-tube has been in position for some time. No one who has worked at the bacteriology of the urinary tract can fail to have met with a few instances of proteus infection in which the patient's symptoms and condition left no reasonable doubt of the powers of this organism for active mischief. The following quotation, in which I am responsible for the italics, from the Horace Dobell lecture for 1908 is very much to the point. Speaking of B. proteus, the author observes: "This group of bacteria is found most commonly in the urine and intestinal tract. In the former it may be the cause of bacilluria, and may have been present for varying periods unknown to the patient. It may at any time and for some unknown reason give rise to active infection of the urinary tract, but this is not, however, of *very common occurrence*. It is known that in *some cases of cerebral abscess the only organism which is cultivated from the pus may be one of the proteus group*. This fact is of great interest because in some cases of chronic middle-ear disease the discharge will be found to show the presence of this bacillus in pure culture. The proteus group serves as an excellent illustration of the all-important fact referred to elsewhere in this lecture—namely, the persistence of an organism in the tissues for indefinite periods without giving rise to any symptoms, but occasionally acting as the cause of some acute illness." As regards its pathogenic properties for the laboratory animals in the same set of Croonian lectures already referred to, Mr. Dudgeon states that: "Numerous experiments were made with cultures of the bacillus proteus inoculated from cases of cystitis and infected wounds. These cultures were all proved to be highly virulent for rabbits."

FIG. 2



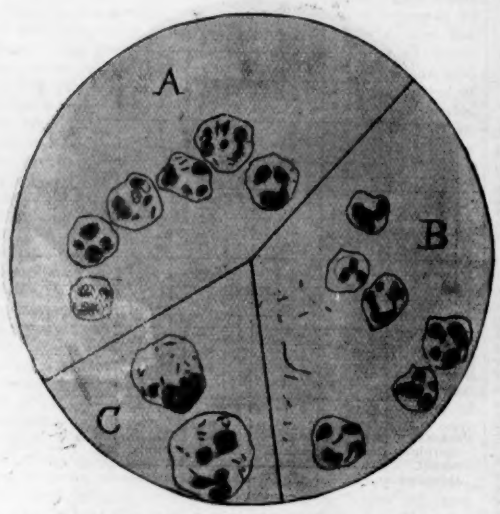
Photomicrograph of the cerebro-spinal fluid. Shows polymorphonuclear leucocytes with intracellular and free bacilli. 1/12th in. oil immersion objective. Stained carbol-thionin-blue.

The post-mortem examination.—Owing to the unfortunate circumstance that the time of the patient's disease necessitated the performance of a necropsy on Easter Sunday, no cultural investigations were undertaken. It can only be stated that bacilli were present in large numbers in the cerebral exudate and that the pus consisted almost entirely of polymorphonuclear leucocytes (Fig. 2). There was no evidence of localised abscess, although the ventricles were full of purulent fluid. In favour of the view that an acute proteus infection of the meninges was the cause of death are: (1) the presence of the bacillus in the cerebro-spinal fluid during life, together with numerous polymorphonuclear leucocytes, some of which were phagocytic; (2) the presence of

a certain amount of agglutinin agains this own organism in the patient's serum at the terminal stages of his illness; (3) the acknowledged pathogenic powers of B. proteus in certain rather exceptional instances, and the proof that some strains of it are virulent for rabbits; (4) the fact that it has been cultivated from cases of cerebral abscess; and (5) the presence of pus in both middle ears and the well-known connexion of the organism with many cases of otitis media. Against this view it may be argued that the failure to recover the organism after death and to investigate its cultural reactions affords a loophole for criticism, although that failure happened to be due to circumstances beyond my control. It can be further urged that the real infective agent was overgrown, or, so to speak, swamped by a secondary proteus infection, although personally I am of opinion that the weight of evidence is against such a supposition in this particular case. Lastly, in respect to finding pus in the middle ear, Dr. R. S. Frew informs me that he has noted pus in the middle ear in a very large percentage of all necropsies on young children at the Great Ormond-street Hospital. If I understand him rightly, Dr. Frew does not consider that the presence of pus under these circumstances necessarily points to active middle-ear disease, and I have myself found it present when there were no ear symptoms during life.

The film prepared from the cerebro-spinal fluid was stained by carbol-thionin, and although the cell nuclei took up the stain very well, the bacilli were much less deeply tinged; in consequence, it was difficult to obtain a photomicrograph showing the morphological characteristics of the organisms satisfactorily. To obviate this to some extent a drawing has been prepared to show both the phagocytic action in progress and also the appearances of the bacilli (Fig. 3).

FIG. 3.



A drawing compounded of three different fields. A, Shows a chain of phagocytes. B, Bacilli lying free in the field. C, Glutton cells. 1/12th Zeiss objective. Ocular No. 6.

In conclusion, I have to thank both Dr. Gossage for permission to publish this case, and also Dr. A. G. Hamilton, the resident medical officer, for supplying me with the notes of the necropsy.

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A CASE OF PNEUMOCOCCAL CEREBRO-SPINAL MENINGITIS.

BY J. H. CUMMING, M.R.C.S. ENG., L.R.C.P. LOND.

(*With Remarks by* Dr. HARRINGTON SAINSBURY.)

THE patient, a male aged 12 years, was admitted to the Royal Free Hospital, under the care of Dr. Sainsbury, on Feb. 6th, 1912. There had been twitchings of the face for three months. Four days before admission severe vomiting had set in, followed by acute pain in the back of the head and neck, and in the back of the legs. The child became delirious and there was retraction of the head.

On admission the patient lay with his knees drawn up; he was delirious and the head was markedly retracted; he complained of great pain in the back of the head and neck. Temperature 102° F., pulse-rate 92, respirations 28. The vomiting continued. Physical examination revealed marked retraction of the head, no rigidity of the upper limbs, the legs somewhat rigid and flexed at the hip and knee-joints, and the abdominal wall retracted. There was no squint or evidence of affection of any of the cranial nerves. The knee-jerks were slightly increased, but there was no patellar or ankle clonus. The plantar response was indefinite, but not extensor. Kernig's sign was well marked. The abdominal reflexes were present and were equal. Nothing abnormal was detected in the heart, lungs, or abdominal organs. A lumbar puncture was made and about 3 c.c. of cerebro-spinal fluid were withdrawn apparently under normal pressure. It was examined and reported on as follows:—

Colourless turbid fluid containing some blood and a trace of albumin, no reducing substance. Microscopically many leucocytes, about 80 per cent. of which are polymorphonuclear. Direct films contain large numbers of Gram-positive diplococci, probably pneumococci. The culture has grown staphylococci, probably contamination, and some pneumococci.

On Feb. 8th the temperature fell to 97°, but the vomiting and headache continued, the latter being unrelieved by ice-bags. On this date lumbar puncture was again performed and the fluid withdrawn was examined. The report was:—

Slightly turbid fluid, a little fibrinous coagulum. Microscopically many leucocytes, 66 per cent. polymorphonuclear cells. No organisms found in direct films. Culture grew pneumococci as before, but sparingly.

On the same day a fleeting erythematous rash was noticed on the face, the back, the thighs, and the buttocks; head retraction was unrelieved; the pulse-rate was slow, 60–70; the respirations were 24; and the temperature was 101·2°. On the 9th lumbar puncture was performed, when 10 c.c. of cerebro-spinal fluid were withdrawn, under greater pressure than before, and 3·5 c.c. (equivalent to 100 units) of anti-pneumococcal serum (Merck) were injected into the spinal canal. The injection was attended with considerable pain, especially in the legs and the back of the head; this continued for about two hours, the child tossing about and crying as though in great pain and distress. Subsequently during the evening the temperature rose to 102°. Two further injections of 3·5 c.c. of the serum were administered on the 10th and 11th respectively, on each occasion under an anæsthetic. On the 11th the temperature fell to subnormal and remained so for 24 hours. On the 13th, after another rise of temperature to a maximum of 100·4°, 7 c.c. (equivalent to 200 units) of the serum were injected into the spinal canal, cerebro-spinal fluid having been previously withdrawn. The painful after-effects of the injection were not diminished by the anæsthetic. The head retraction now became gradually less and the headache abated. The legs, hitherto invariably flexed, were straightened out at times. Three further injections of 7 c.c. of the serum were made on the 15th, 17th, and 19th respectively. On each occasion more cerebro-spinal fluid was withdrawn than serum injected into the spinal canal. The fluid flowed under varying pressures. The temperature still mounted on occasion to 100–101°, but the general curve of the chart was much flatter and the child's condition was decidedly improved, the headache and head retraction having almost disappeared. Morphinæ sulphas, gr. 1/6, was now given as soon as the child recovered from the anæsthetic, and the after-effects of the injection were thereby much diminished; subsequently these were wholly prevented in the remaining serum injections by a

previous hypodermic of the injectio morphinæ (B.P.) ɱ liss. On the 22nd the temperature rose to 101·6°, and a further serum injection of 7 c.c. was given. The temperature now became subnormal, with the exception of an occasional rise to 99°. Headache and head retraction had by now quite disappeared. Two more injections were given on the 24th and 26th. The temperature now remained subnormal for eight days, with the exception of two rises to 99°, and all symptoms had disappeared.

On March 2nd a lumbar puncture was performed, cerebro-spinal fluid being withdrawn for examination, but no injection was made. The report on the fluid was as follows:—

Clear colourless fluid, containing albumin; no reducing substance; microscopically a few pus cells, chiefly mononuclear, visible; no organisms seen in direct films; cultures on agar have grown a Gram-positive diplococcus.

As a result of this examination an injection of 7 c.c. of the serum was made eight days after the preceding one, and this was followed by some disturbance, headache, vomiting, and much restlessness and nervous upset. The temperature, which had remained subnormal for ten days, with the exception of two rises to 99°, rose now to 99·8°, and the pulse-rate quickened for the first time to 104. The temperature continued to rise above 99° for the next four days, when it again became subnormal and remained so. No further injections were made, and the patient thenceforward made continuous and satisfactory progress, except for emotional instability, at first very marked. Some two or three weeks later the boy left for a convalescent home. In all, ten injections of the serum had been made, the first four consisting of 3·5 c.c., the remainder of 7 c.c.; in almost every case the injection was followed by a rapid fall of the temperature. In October the boy was seen and was in good health.

Remarks by Dr. SAINSBURY.

Whether any real significance attaches to the statement that twitchings of the face were noticed for some three months before the onset of the acute mischief it is not possible to decide, because of the vagueness of the history in this respect. On admission the disorder was fully developed and typical of cerebro-spinal nerve irritation. The nature of this was proved to be inflammatory from examination of the fluid obtained by lumbar puncture—the cause of the inflammation the pneumococcus; this is the first point of interest.

The next point to note is the unmistakable subsidence of the disease following upon a series of intraspinal injections of anti-pneumococcic serum (Merck). This was seen strikingly in the general downward trend of the temperature curve, as also in the particular fall following the individual injections in almost every instance. To this, however, there was one decided exception in the case of the last injection, which was followed by a certain amount of febrile disturbance lasting three or four days. This injection had been preceded by an interval of eight days and the question arose, Was it anaphylactic? It was decided that it was not, first because the reaction though definite was mild, then because the interval was within the 12-day limit, again because the boy being very emotional and a good deal upset each time by the intraspinal injection, it was thought the emotional disturbance alone might explain. Whatever its nature, the patient was actually worse after this injection. It should be remarked that this same injection had been given, not because of the persistence of symptoms, but because an antecedent exploratory lumbar puncture had shown the presence of pneumococci in the spinal fluid, though the inflammatory elements in the fluid had nearly all disappeared and irritative symptoms likewise. The disturbance having now subsided and convalescence having resumed its previous course, it was resolved to ignore the question of the presence of pneumococci and to be guided by symptoms solely, on the assumption that no symptoms must mean no virulence of the organisms (if present). One is accustomed to proceed on similar lines when treating a case of diphtheria which has subsided symptomatically, though the bacilli happen to persist in the throat more or less indefinitely. In this resolution one was strengthened by the statement of Besredka that the administration of an ether anæsthetic avoids the dangers of anaphylaxis, for, accepting this, the resumption of injections would be always safely available. It would be interesting to know whether further clinical experience confirms Besredka's teaching.

Attention may next be drawn to the severe head symptoms (pain, excitement) which followed the earlier injections and which quite disappeared under the use of antecedent morphia injections. These symptoms could not be due to any rise in the cerebro-spinal fluid pressure because the serum injected was always less in bulk than the fluid previously withdrawn. The question arises here, May not the occurrence of these symptoms be taken as evidence of the free communication between the ventricles of the brain and the spinal canal—a point of considerable practical importance since it has been shown that interruption of this communication by exudation at the base of the brain does occur and may necessitate the concurrent use of intraventricular and intraspinal injections (in adults the lateral ventricle is reached after trephining the skull). In the present case further evidence of the free cerebro-spinal fluid communication was forthcoming in the freedom with which in most instances the fluid flowed.

In conclusion, the generally admitted gravity of pneumococcic cerebro-spinal meningitis may be noted, though actual mortality tables are not quoted. The case here described was uncomplicated by any symptoms of inflammation elsewhere in the body (no evidence in nose, throat, or lungs); so far as could be determined the infection of the nervous system was primary.

PANCREATITIS WITH JAUNDICE IN THE INFECTIOUS DISEASES.

WITH NOTES ON FOUR CASES.

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THE following cases of pancreatitis with jaundice have recently occurred in patients in the City Hospital, Norwich. In three instances this complication occurred during an attack of scarlet fever; in one in a patient suffering from diphtheria.

CASE 1.—Male, aged 9 years. Admitted on Sept. 7th, 1911, with well-marked scarlatinal eruption. Temperature 102·8° F. Tonsils and fauces reddened and congested, some pharyngeal discharge, and slight rhinorrhœa. On the 9th the conjunctivæ were noticed to be slightly yellow, the boy complained of "pain in the stomach," and the temperature, which had fallen to normal, rose to 100°. The stools were colourless and bile was present in the urine. On examination there was distinct tenderness over the head of the pancreas, which was more marked next day when a distinct swelling could be felt in this region. On the 11th jaundice was well marked and from this date the abdominal tenderness and swelling gradually subsided. From the 11th to the 14th the pulse varied between 70 and 80, but after this date up to the day of discharge never fell below 80. The boy had an uneventful convalescence, uncomplicated except for a rather troublesome rhinorrhœa, and was discharged cured on Nov. 1st.

CASE 2.—Male, aged 5½ years. Admitted on Jan. 18th, 1912, with definite sore throat and well-marked scarlatinal rash. On the 20th the temperature fell to normal, and typical desquamation of the neck, body, and hands ensued. On the 31st the boy developed a slight rhinorrhœa. On the morning of Feb. 2nd he vomited and complained of sore throat; the temperature rose to 100·2°, and a few hours later a punctate erythema developed over the back and chest, gradually involving the whole body and limbs. Two days later the temperature became normal and a second desquamation began following the usual course. On the 15th the temperature again rose to 100·2°, and the patient developed well-marked chicken-pox, contracted undoubtedly from a case that had occurred in the ward 18 days previously. On the 23rd the boy complained of pains in the joints, and the temperature, which had been slightly raised for the previous two days, rose to 102·4°. There was slight effusion in several joints, those more particularly affected being the wrists, knees, and ankles. The attack, however, rapidly subsided under aspirin, and the boy was quite well until March 2nd, when he complained of "pain in the stomach," and the temperature, which had been subnormal, rose to 99°. There was distinct tenderness and rigidity in the subcostal triangle. The next day he was distinctly jaundiced, still complained of abdominal pain, and a tender swelling could be felt in the region of head of pancreas. The stools were colourless. The abdominal swelling and tenderness passed away in the course of a few days, the jaundice gradually faded, and the patient was discharged cured a fortnight later.

CASE 3.—Female, aged 7 years. Admitted on Feb. 25th, 1912, with typical scarlet fever rash, sore throat, and adenitis. Temperature 101° F. The temperature fell to normal on the 27th. On the 29th a small submental abscess was opened. Between March 10th and 15th the child vomited on several occasions after food. On the 17th she complained of pain in the upper part of the abdomen. Examination showed the abdomen to be rather distended and distinctly resistant to pressure in the epigastric region. The following day there was slight icteric tinge of the conjunctivæ, and the child complained of acute abdominal pain and vomited several times. For several days she was very constipated and was only relieved by enemata. The stools were normal but rather pale in colour, and the skin assumed a distinct yellow tinge. She vomited twice on the 22nd, from which date she improved, all her symptoms clearing up until the 31st, when she again vomited, complained of abdominal pain, and the conjunctivæ showed a marked

yellow tinge. This attack passed off in the course of two or three days and the child was discharged cured on April 23rd.

CASE 4.—Male, aged 9 years. Admitted on March 21st, 1911, with well-marked faucial diphtheria. A slight trace of albumin appeared in the urine on May 5th and continued until the 15th. On the 19th the temperature rose to 101·6° F., and the boy vomited and complained of abdominal pain. The next day the abdomen became very distended and there was tenderness in the epigastrium. On the 25th there was bile in the urine, the fæces were clay-coloured, the conjunctivæ distinctly yellow, and a tender swelling could be felt in the region of the head of the pancreas. In the course of the next few days the jaundice of skin became very marked and the lump in the abdomen very distinct. On June 2nd, for the first time since the onset of attack, there was no bile in the urine, and from this date the jaundice gradually subsided, and no further complication arising the boy was discharged cured.

References in text-books on medicine and on the infectious diseases to the occurrence of jaundice as a complication or sequela of the specific fevers are somewhat meagre. William Hunter (Allbutt's "System of Medicine," article Jaundice) includes under the head of Toxæmic Jaundice those cases met with in the specific fevers. Von Ziemssen, writing on scarlet fever in the "Cyclopædia of Practice of Medicine," says: "Icterus may occur as the result of slowly progressive changes in the liver, but becomes marked only after the disappearance of the eruption. Saltus states that he has frequently observed icterus as a complication of scarlet fever in an epidemic distinguished by anomalous cases. Patients very frequently recover from this complication, but a fatal termination is not uncommon." Gee, in Reynolds's "System of Medicine," states: "In scarlet fever yellowness of the conjunctivæ, tenderness over the liver, and evidence of bile in the urine are occasionally present, and where present devoid of prognostic significance." Murchison, in his Croonian lectures on Functional Derangements of the Liver, considers the jaundice of the various specific fevers as independent of mechanical obstruction of the bile-duct. In his lectures on Diseases of the Liver he says he has only met 5 instances of jaundice in 2000 cases of scarlet fever, 3 of which died. In 2 cases necropsies were performed; in 1 nothing abnormal was found, in the other marked degenerative changes in the liver. Roberts ("Practice of Medicine"), under Toxæmic Jaundice, describes that form met with in certain specific fevers—viz., yellow, remittent, intermittent, relapsing and very rarely typhus, typhoid or scarlatina, but goes on to say, "I cannot but express my agreement with those who consider in many of these cases it results from obstruction, at all events to some degree." Sidney Phillips, in THE LANCET of March 21st, 1908, reports an interesting case of jaundice in a patient during an attack of scarlet fever, who also had parotitis and abdominal symptoms suggestive of pancreatitis. He draws attention to the comparative rarity of these complications, the mild and temporary character of the jaundice, and the very definite involvement of the pancreas, as evidenced by swelling and tenderness in the region of the head of that gland, and concludes that the jaundice is in such cases obstructive and probably arises from pancreatitis.

In the three scarlet fever cases quoted above the degree of oral sepsis present was slight, the condition of the teeth especially in all three cases being above the average. One complication was, however, common to all—viz., marked rhinorrhœa, which preceded the onset of the pancreatitis. This complication was also present in two cases of parotitis which occurred during the past year in the City Hospital—the one in a case of scarlet fever in which the left parotid was involved on the twenty-first day, the other in which both parotid glands were involved in a patient suffering from diphtheria on the twenty-seventh day. In neither of these cases had the patients, so far as could be ascertained, been in contact with cases of mumps immediately prior to admission (there had been, and were, no cases in the hospital), nor did they themselves give rise to further infection, and I think, therefore, the parotid infection may be justifiably considered of the non-contagious variety similar to that occasionally seen in enteric, relapsing, and typhus fever.

It would appear, therefore, that in scarlet fever at any rate two types of jaundice may be met with—the one a toxæmic form exceedingly rare, at any rate nowadays, possibly because of the mild type of disease prevalent, associated with marked degenerative changes in the liver and in which a high mortality is to be feared; the other less uncommon, obstructive in origin, mild and transient in character, and unattended by danger to life, and probably due to an infection of the pancreas.

Norwich.

FRACTURE OF THE CARPAL SCAPHOID BONE ASSOCIATED WITH MEDIAN NERVE INVOLVEMENT.

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FRACTURE of the carpal scaphoid bone is a common lesion, the patient usually considering that he has sprained his wrist. The movement which causes him most pain, and which often is very limited, is that of extension. Physical signs are swelling of the wrist over, and tenderness on pressure on, the affected bone, both in front and behind and also in the "snuff-box." Crepitus can occasionally, and best, be elicited by applying pressure in the "snuff-box."

My reason for giving short notes on the following cases is that in addition to the fracture there was in each case partial median nerve involvement.

CASE 1.—The patient, who was seen in December, 1910, had 18 months previously sprained his wrist while playing football, the ball striking and over-extending his wrist; and though treated by his medical man by rest, massage, &c., had, when seen as an out-patient, limited and painful extension of the wrist and tenderness over the scaphoid. An X ray photograph showed ununited fracture. In addition he complained of pain down the thumb and index finger, worse when he extended his wrist. Sensation was tested and no area found anæsthetic to cotton wool.

CASE 2.—The patient, seen in January, 1911, had the usual signs and symptoms of fracture of the scaphoid, and in addition well-marked crepitus. Diagnosis was confirmed by X ray photograph. He also complained of burning and tingling in his hand, which was so severe as to necessitate for the first two or three evenings the exhibition of morphia. The median nerve was tender to pressure over the front of the wrist. A few days later, by dragging a pin point across the hand, the distribution of the median nerve could be easily mapped out, the patient feeling a distinct alteration in sensation as the pin point entered the median area. Sensation to pin point was intact over the whole area, but sensation to cotton wool was absent over the palmar surface of both phalanges of the thumb and over the palmar surface of the distal two phalanges of the index and middle fingers. There was no paralysis of motion. The patient steadily improved until in August, 1911, sensation was practically normal, there being only slight numbness to cotton wool over the pulp of the middle finger.

CASE 3.—The patient in July, 1911, was treated for an over-extended and "sprained" wrist contracted while lifting a heavy weight four weeks before. Two weeks later the thumb and index finger "commenced to sleep," and pain, severe in character, darted up the front of his forearm from the fingers and gave him a sensation as though the forearm were bursting. The pain prevented sleep. When the patient was seen he had the usual symptoms and signs of fracture of the scaphoid, and the diagnosis was confirmed by X ray photograph. On testing his sensation no area was found anæsthetic to pin point or cotton wool, but on dragging a pin point down the thumb and index finger a line of change was found at the level of the inter-phalangeal joint of the thumb in front and at the level of the distal interphalangeal joint of the index finger both in front and behind. Sensation to cotton wool, though present over these areas, was numbed.

From the nature of the accident in two of the cases (Nos. 1 and 3)—namely, sudden over-extension of the wrist—one considered that the median nerve had been over-stretched and was probably pressed upon by one of the scaphoid fragments, especially as extension of the wrist caused tingling in the thumb and index fingers. In the second case the patient could not give any detail as to how the fracture occurred, as he received it, in addition to other injuries, through falling from a height, but from the signs and local tenderness over the nerve it was concluded that he had also overstretched and so partially torn his median nerve at the wrist.

Glasgow.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

Death after Hedonal Anæsthesia.—Exhibition of Apparatus.

A MEETING of this section was held on Nov. 1st, Dr. J. BLUMFELD, the President, being in the chair.

Dr. G. A. H. BARTON read the notes of a case of Death after Hedonal Anæsthesia. He said that the virtues of a new anæsthetic were apt to be over-estimated; one heard of the successes, but little of the deaths. He had only found three, including the present case, reported in the journals up to date; these were excessive considering the small number of administrations. Rumours of unreported fatal cases, however, were rife, and it was in the hopes of eliciting some definite information on the safety of hedonal, and in the class of case in which it was contra-indicated, that he reported this fatality. The patient was an ill-nourished tailor, who had lately been on strike. There was no complaint of cough, and his respirations and temperature were normal; nothing was noted amiss with his lungs. The pulse was, of course, rather poor. Operation was opening and draining both frontal sinuses, the posterior nares being first plugged with a sponge. The induction was very quiet in three and a half minutes, and after the infusion of 400 c.c. he appeared to be under. The rate of flow was slowed down, and at the end of five minutes he had nearly 500 c.c., and operation was commenced. The rate was cut down to slowest possible and remained at that. It was apparently one of the quietest and best anæsthesias. The only adverse point about it was that the patient's colour was dusky throughout. Dr. Barton attributed this at the time to the post-nasal plug and a towel over the mouth causing some obstruction. The operation lasted 1½ hours; 1000 c.c. were infused in all. A quarter of an hour before the termination of the operation he ceased the infusion and administered oxygen, which speedily improved the patient's colour. No blood got into his air passages during the operation; the post-nasal plug was removed at its termination. He left him still unconscious, but apparently in good condition. The patient died two hours after without regaining consciousness.—Dr. R. S. TREVOR read an account of the post-mortem findings, and said he attributed death to heart failure while the patient was suffering from the toxæmia of tuberculosis, such death having been hastened by the administration of hedonal and by interference with his respiration owing to bleeding into the trachea. The man was anything but a fit subject for an anæsthetic, and his privations owing to the strike had reduced him very much. The blood in the trachea was not frothy, and probably some of it was of post-mortem origin. There was a mottled or "tigroid" condition of lung.—Dr. Z. MENNELL said he had given hedonal in 56 cases of cerebral surgery, and not one death occurred within 12 hours of the operation. He had given it 196 times altogether, and at St. Thomas's Hospital some 500 administrations of the drug had been given. The contra-indications against its use were: (1) for operations which would cause bleeding into the larynx or trachea; (2) cases in which the blood pressure was high; and (3) cases in which the anæsthesia could be obtained as safely and satisfactorily by other means. For cerebral surgery he considered the drug almost ideal. The prolonged sleep after the operation was often most useful, and obviated the necessity of giving a narcotic. The rate at which he now gave the drug was 100 c.c. every two or three minutes. Rapid administration produced cyanosis, which he regarded as the greatest danger signal in connexion with the drug. The corneal reflex he regarded as valueless; the skin reflex on the sole—causing toe movement and drawing up of the leg—was much more useful. One of his early cases died within eight hours of operation, which was enucleation of a cancerous tongue in an old man; and post mortem a clot 4 inches long was removed from the larynx. By giving ¼ gr. of morphia at intervals one patient was able to take as little as 240 c.c.—Dr. J. F. W. SILK considered that the doses of hedonal recommended and used were too large. There seemed to be a difficulty in giving just sufficient to get the patient under, while not giving too much. No doubt hedonal could be usefully employed as an adjunct to other anæsthetics. He commented on the fact that the advocates of hedonal now abandoned their recommendation of it as an universal anæsthetic and acknowledged its limitations.—Mr. J. D. E. MORTIMER reminded those present that Dr. Barton published a short note on the case now detailed immediately after its occurrence, and he thought this should be done far more frequently when difficulties and disasters appeared during the trial of new methods. He knew, indeed, of two fatalities not mentioned that evening, and so far as he knew unreported, although they happened some months ago.—Dr. BARTON replied. He thought that if the reflexes were abolished hedonal became dangerous, and if the skin reflex was allowed to persist that the anæsthesia would be unsatisfactory.

Dr. SILK explained the working of Dr. Elsberg's apparatus for the Intratracheal Insufflation of Ether. He had had difficulty in introducing the catheter, but when once in position the anæsthesia was good.

Mr. G. E. GASK and Mr. H. E. G. BOYLE showed their apparatus. Mr. Gask said that the apparatus was mainly intended for intrathoracic operations, and the anæsthesia was quite satisfactory.—Mr. BOYLE explained the working of the apparatus, but as he had only done 20 cases he was not prepared to discuss the merits or otherwise of the method.

Dr. F. E. SHIPWAY showed and explained the working of an apparatus made after the pattern of Kelly's.

MEDICAL SOCIETY OF LONDON.

Hedonal Anæsthesia.

A MEETING of this society was held on Oct. 28th, Sir W. WATSON CHEYNE, the President, being in the chair.

Mr. C. M. PAGE communicated a paper on Further Experiences of Hedonal Anæsthesia, in which he said that hedonal anæsthesia had been employed at St. Thomas's Hospital for about a year. The saphenous vein had been commonly chosen; it was exposed by incision, where it lies on the internal malleolus, and the cannula tied into it. He thought that for most cases this was convenient, as the leg required no special fixation, and the tube could be steadied in the cleft of the toes. The fluid in the tank was formerly kept at a temperature of about 120° F., but this was too hot, 110° or 105° being quite sufficient. He attributed several cases of local thrombosis of the vein to the use of too hot a solution. No death could be attributed to the anæsthetic at St. Thomas's Hospital. The fatal cases reported were due to over-dosage. Safe anæsthesia was usually associated with the persistence of a skin reflex, and the patient should react in a moderate degree to the first skin incision. The cases which were unsuitable for the method were: (1) Aged subjects, and especially those in whom there was marked arterio-sclerosis; (2) cases which were the subject of active pulmonary disease; and (3) cases in which the heart was not sound. The following were the forms of cases in which the drug had been exceptionally successful: (1) Cases of goitre, including five of Graves's disease; (2) cases of shock associated with hæmorrhage; (3) cerebral and spinal cases; and (4) any case in which there was considerable post-operative pain, the prolonged narcosis in such being entirely advantageous. He had found the quiet type of light anæsthesia which a small dose produced very useful in cases of cellulitis of the neck. In conclusion, he said that the method had, for properly chosen cases, a definite value. The procedure had distinct dangers, due chiefly to the ease with which an overdose could be given.

Dr. Z. MENNELL read a paper on Hedonal Infusion Anæsthesia, with special reference to its uses in intracranial surgery. This form of anæsthesia had been induced 310 times at St. Thomas's Hospital since Mr. Page published his original 200 cases; no death had occurred within 12 hours. His technique was that of Mr. Page with slight differences in manipulation and apparatus. The standard solution used was 0·75 per cent. of hedonal in normal saline. If possible the blood pressure was taken first. The whole foot was painted with iodine and the internal saphenous vein opened under novocaine. An ordinary silver cannula was then tied into the vein and the solution, at a temperature

between 100° and 110° F., was run in slowly at the rate of about 100 c.c. every two or three minutes. The temperature should not exceed this, as several cases of thrombosis occurred when a hotter solution was used. To run in 100 c.c. a minute, as was originally described, was too fast, and cyanosis was liable to occur, which was a dangerous symptom. The amount necessary to induce anæsthesia varied greatly, and the higher the blood pressure the more anæsthestic was required. Far too big doses had been given in the past, and the more the method was used the smaller was the dose given. Usually, after 300 or 400 c.c. had been given, the patient could be prepared for operation, and the incision could be made when 500 c.c. had been given. It was essential that there should be a brisk skin reflex, so brisk, in fact, that the patient had to be held down, in consequence of which it was necessary for the surgeon to make one quick cut through the skin and afterwards avoid touching the skin edges. The internal saphenous vein was used by choice: 1. Because it was out of the way. 2. As a convenience to the anæsthetist, enabling him to take the blood pressure in the arm. 3. The vein had large calibre and was easily exposed. 4. There was no need for such special apparatus, as suggested by Sir Berkeley Moynihan. Directly the incision had been made the abdominal muscles remained absolutely lax throughout a long abdominal operation without movement on the part of the patient. The flaccidity of the abdomen was marked, and was only comparable to that obtained during a satisfactory spinal anæsthesia. The type of anæsthesia obtained was almost perfect. There was complete relaxation, an excellent colour and pulse combined, with quiet, regular respiration; in fact, the picture of natural quiet sleep. This state could be maintained for prolonged periods and with the use of very small quantities of the drug. The best rate of flow was about 30 to 60 drops a minute and should not fall below 10 drops a minute, as otherwise blood would block the cannula. It was important to note the following points during the progress of anæsthesia: 1. Respiration: This should be quiet and free from stertor. Any stertorous breathing meant that the tongue had fallen back. With the lighter anæsthesia as now used this but very rarely occurred. Any irregularity indicated too much anæsthetic. 2. Skin reflex: This should never be abolished. It ought always to be possible to elicit a movement of the leg by stroking the sole of the foot sharply or by pinching the lobe of the ear to get a lateral movement of the head. 3. Blood pressure: Especially in cerebral work the blood pressure should not be allowed to fall too low. It was his custom to take the blood pressure every four or five minutes during operation. 4. The pulse: Always increases in rapidity. A pulse-rate of 140 or 160 was not uncommon. This persisted sometimes after the operation for some hours, and if not expected might cause unnecessary alarm He considered the following to be contra-indications to the use of hedonal: 1. Any operation about the air-passages which caused hæmorrhage into them, without preliminary laryngotomy. The laryngeal reflex was not recovered quickly enough to prevent the blood trickling into the larynx. 2. Cases of high blood pressure. 3. Cases in which anæsthesia could be obtained as safely and as satisfactorily by other means. Hedonal was indicated in: 1. Operations in the neck; goitre, including Graves's disease. 2. Ventral hernia, on account of the absence of vomiting after operation. 3. Intracranial operations. In 56 consecutive intracranial operations since February last hedonal was the only anæsthetic used. The advantages over the method of giving chloroform and oxygen with the Vernon Harcourt inhaler were well marked. 1. The anæsthetist was out of the way. 2. Any posture of the patient was possible, as long as there was a free air-way. 3. There was no initial fall of blood pressure, as was so common with chloroform; the blood pressure was well maintained at first, and only fell gradually after prolonged operation or mechanical interference with the brain. 4. It was frequently possible to proceed further with the operation, thus avoiding a second stage. 5. There was no vomiting after operation, a very great gain in these cases, when the head had to remain in sandbags in one position. The nursing was easier for the same reason. 6. The prolonged sleep after returning to bed was invaluable from a nursing point of view as well as from the patient's. No narcotics were necessary, and there was seldom any pain or malaise after operation. 7. If necessary, ordinary saline infusion could be given at once, without any further incision. These advantages in cerebral surgery were important and far outweighed the general disadvantages which he had already put forward. When the dura was incised it was good to see a slow movement either of an arm or leg and to see a brisk skin reflex which could be elicited by stroking the soles of the feet. At such a time anæsthesia must be as light as possible. A sudden increase of the depth of anæsthesia was often most striking, and might be due to the increased facility with which the drug had access to the nerve cells when the intracranial pressure had been diminished. From a somewhat large personal experience of cerebral operations he had no hesitation in expressing his preference for hedonal as compared with any other general anæsthetic, more especially chloroform.

Mr. PERCY SARGENT said that hedonal had been used to promote anæsthesia in 43 intracranial operations he had performed, 33 for cerebral tumours, 4 for removal of the Gasserian ganglion, and 6 for hydrocephalus, meningitis, and Jacksonian epilepsy other than that produced by tumours. No deaths had occurred directly from the anæsthetic. The operative fatality within the first 48 hours, possibly partly due to the anæsthetic, was as follows: In 60 chloroform had been given, mortality 20 per cent.; in 29 ether, mortality 13 per cent.; in 31 hedonal, mortality 3 per cent.

Mr. BARRINGTON WARD read a paper on Hedonal Anæsthesia—its Use in Children. He had employed it in 70 cases. The first 50 cases were for all kinds of conditions, but in the last 20 only those cases were selected for which hedonal was thought to be particularly suitable. It was by far the most convenient anæsthetic in children. It was constant in position, out of the way of the operator, and obtruded itself less on the patient. The insertion of the cannula was not always an easy matter, and it was one of the disadvantages of the method that practically an operation had to be performed to find the vein before the main interference. In only one case were the veins found to be too small for the purpose. Induction took on an average 7 minutes, and the amount of solution varied from 30 c.c. in a child of 9 days, to 680 c.c. in a boy of 7 years. It varied within fairly wide limits, the variation being due to the size of the cannula and of the vein. A small quantity run in quickly induced anæsthesia sooner than a much larger quantity run in slowly. The only satisfactory way of estimating the depth of anæsthesia was by slight cutaneous stimuli, such as a pin prick. It was not at all infrequent for the patient to make slight movements in reaction to the stimulus of the skin incision. During the subsequent manipulations even the peritoneum could be freely handled without calling forth any reaction, but if the skin was at any time stimulated slight movements occurred. This uncertainty of when the patient was under was one of the great disadvantages. In children there was a very small margin between the complete abolition of the skin reflex and the danger sign of respiratory depression. Even if the skin reflex was present, muscular relaxation was very complete. The colour of the patient was remarkably good. When once anæsthesia had been established very little hedonal, if any, was required to be given to maintain it. In 9 cases no further anæsthesia at all was necessary for operations lasting for from 18 to 50 minutes. The colour had not been useful as a warning of danger. Gradual slowing of the respiration and deep sighing with apnœic pauses were signs that the drug had been pushed too far. There had been one fatality. The patient was a girl, aged 8, with tuberculous glands of the neck. 300 c.c. of solution had been used to induce anæsthesia, and 200 had been given during the progress of the operation, which had lasted 30 minutes. A post-mortem examination revealed the condition of status lymphaticus. In only one other case had there been any anxiety, and that was in a similar type of child. He did not think hedonal could be extolled as a safe anæsthetic. Federoff, the originator of the method, had reported temporary cessation of respiration in 8 out of 530 cases. The advantages were: for the patient hedonal was one of the most pleasant anæsthetics, and its administration was practically free from discomfort. It was noticeable that the preliminaries to an operation under hedonal were always quieter than under any other anæsthetic. One patient after an experience of spinal, inhalation, and intravenous anæsthesia begged when an anæsthetic was required on a fourth occasion that intravenous anæsthesia should be given. For the operator the conditions were all that could be desired. Excellent muscular relaxation was obtained. In operations about the head it was of

advantage not to be hampered by the armamentarium of the anæsthetist. In the acute empyemas of children with hedonal the respiration was quiet and regular throughout, and no explosive coughing occurred even when the chest was opened. The after results of the anæsthetic were excellent. The drug was excreted very slowly, and a quiet sleep for from five to seven hours was usually obtained. On recovery the child was perfectly fit and ready to take food, but inclined to sleep for the next 24 hours. The absence of vomiting was a noticeable feature. The urines were examined before and after operation. The figures were too small to be of much value, but less than half showed any increase in acetone, and in 9 per cent. of the cases acetone was present before operation and absent afterwards. None of the cases gave any clinical signs of the presence of acetone. The disadvantages of the method were by no means few. In its immediate effects it was probably as dangerous as chloroform, and much more dangerous than open ether. Its late effects, however, compared very favourably with any other anæsthetic. The estimation of the depth of anæsthesia was difficult to determine exactly. The slowness with which hedonal was excreted demanded very careful administration. If by any unhappy accident an overdose were to be given resuscitation was almost a forlorn hope because of the amount of the drug in the circulation and the slowness of its excretion. As a routine anæsthetic the preliminaries of finding the vein and inserting the cannula might be rather tedious and certainly took longer than induction with the open methods. There was also some uncertainty as regards the size of the vein. The use of hedonal was contra-indicated in short operations because of the slow recovery from the effects of the anæsthetic. It was contra-indicated in the ordinary hospital list of operations because of the extra time consumed and the excellent results that attended anæsthesia by open ether with the preliminary injection of morphine. For the acute abdomens of children spinal anæsthesia with Tyrrell Gray's solution of stovaine-dextrin gave by far the best results. The indications for hedonal were therefore narrowed down to very few. It was the best anæsthetic for brain operations. With hedonal the administration was convenient and the prolonged sleep afterwards greatly reduced the shock of the operation. Moreover, a surprisingly small amount of anæsthetic was required. In empyemata the results were excellent. He would not advocate its routine use in empyemata, however, because except in infants a rib could be resected easily and without distress and with complete safety to the patient with local infiltration anæsthesia. Finally, hedonal should be considered if a patient had already had experience of a general anæsthetic and dreaded another operation on that account, a condition by no means infrequent in older children.

Mr. J. F. DOBSON quoted statistics obtained from the records of the Leeds General Infirmary. Between Feb. 20th and Oct. 8th 436 cases had been operated upon under hedonal anæsthesia; in this series there were 44 deaths, being at the rate of 10 per cent. During the same period the number of general surgical and gynæcological operations totalled 2302 with 164 deaths, a rate of 7·1 per cent. 1866 operations were performed with the older methods of anæsthesia with 120 deaths, a rate of 6·4 per cent. The hedonal cases therefore showed a death-rate of 10 per cent., as compared with 6·4 per cent. for other methods. Hedonal had not been given frequently for the very trivial operations, though, on the other hand, it had only occasionally been employed for emergency operations, such as those for acute abdominal disease. An analysis of the 44 cases which succumbed after operation performed under hedonal anæsthesia gave the following figures. Five cases dying shortly after operation had marked œdema of the lungs. With the exception of one case, in which 900 c.c. were injected, all received more than 1200 c.c. In 4 cases dying from three to six days after operation the lungs were very œdematous. These cases had 1650 c.c., 1450 c.c., 1000 c.c., and 970 c.c. respectively. Of these 9 cases it could safely be said that death was directly due to the anæsthetic in 2, and in 5 cases œdema of the lungs was a factor in causing death. Pneumonia was found on post-mortem examination in 8 cases. In 2 it was associated with peritonitis, and these might be dismissed. Of the remaining 6 cases, 2 had simple broncho-pneumonia; in 3 cases broncho-pneumonia was associated with the presence of multiple abscesses in the lung. There was 1 case of pneumonia with cavitation and gangrene of the lung. Infarction of the lung was found on post-mortem examination in 4 cases. In 3 cases there were numerous infarcts in both lungs; in the remaining case one lung contained two large areas of infarction, the other lung showing diffuse broncho-pneumonia. There were two deaths attributed to shock. In one as much as 1750 c.c. was administered. In the series there were 1 death from pulmonary thrombosis, 2 deaths from pyæmia, and 1 from symptoms suggestive of cerebral thrombosis. The figures showed the frequency of pulmonary complications after hedonal. It was not suggested that in all the cases quoted the death of the patient was due to the anæsthetic; in all, however, it was a factor, and in many the chief. Pulmonary œdema could be largely avoided by taking care not to give more than 1200 c.c.; it followed that hedonal was unsuitable for prolonged operations. The two deaths from shock were perhaps due to the direct toxic action of the drug. The most serious complication was pulmonary infarction and thrombosis. Dr. R. A. Veale had shown that thrombosis at the seat of the venesection was frequent; emboli would readily become detached. This complication might perhaps be avoided by elevating the arm to empty the veins immediately on the cessation of the infusion and then applying a firm bandage. Infarction was probably not infrequent; it was not always fatal, but might occur after the simplest operations. A method of producing general anæsthesia without incurring the risk of inducing pulmonary complications was an urgent necessity. The mortality of certain abdominal operations was due largely to bronchitis and pneumonia, particularly in such operations as partial gastrectomy, colectomy, gastro-enterostomy, and gastrostomy. In many cases this was due to inhalation anæsthesia. It seemed that these complications would be even more frequently met with were hedonal in common use.

Dr. J. F. W. SILK considered intravenous anæsthesia one of the most notable advances in anæsthetisation. In the few cases in which he had used hedonal he had been alarmed by the fact that sleep had persisted for a long time. No doubt in the fatal cases recorded the patients had been too deeply anæsthetised—namely, as deeply as in inhalation anæsthesia. Another reason might be that the solution used was too strong. He had added hedonal to ether given intravenously, and thought this was an improvement both as regards ether and hedonal anæsthesia.

Mr. HUGH M. RIGBY had had experience of hedonal anæsthesia in 20 cases in which he had operated. He had been impressed by the ease with which anæsthesia was produced and the freedom of manipulation permitted in abdominal operations. One case was fatal.

Mr. E. M. CORNER considered affections of the jaw, tongue, and respiratory passages unsuitable for hedonal anæsthesia. The method was valuable from the patients' point of view and was preferred by them to the ordinary methods.

HARVEIAN SOCIETY.

Preparation, Choice of Anæsthetic, and its Management in Difficult Types of Patients during Abdominal and Pelvic Operations.

A MEETING of this society was held on Oct. 31st.

Dr. DUDLEY W. BUXTON, in opening a discussion upon the above subject, said that the underlying physical and pathological states which produced types of patients were the essential matters for the anæsthetist to study. Adopting as his guide that the patient's safety, the suitability of the anæsthetic to the particular operation, and the predilection of the operator for any anæsthetic or method should be placed in this order of importance, the anæsthetist had yet to remember that the success of the operation might depend upon whether the surgeon's desiderata were granted him, and upon this success ultimately must depend the patient's safety or chance of speedy recovery. The environing conditions of the patient were (1) those outside the region of operation, the age and sex, his physique, his habits as regards drugs and alcohol, and so on, and such blood states as anæmia or toxæmia—e.g., sepsis, glycosuria, albuminuria, cholæmia, and the presence of intercurrent organic disease affecting the respiratory, the

circulatory, or the hæmapoietic systems; and (2) those due to abdominal or pelvic affections. Thus abdominal distension, sepsis, and fever, with in some cases vomiting, possibly stercoraceous, introduced fresh factors into the problem presented to the anæsthetist. Such conditions had to be met partly by (1) preparation which included hygienic and drug treatment for some period before the operation; (2) the choice of the anæsthetic and method suitable to the case which offered the least likelihood of peril at the time of the administration of the anæsthetic and promised the fewest deleterious after-effects. Dr. Dudley Buxton pointed out the value to all concerned of giving the skilled anæsthetist the opportunity of studying his case with the home doctor before the operation. Subsequently the nature of the operation became a serious consideration, if, for example, it involved severe hæmorrhage, massive shock, or prolonged and severe trauma. In ordinary circumstances dieting was essential, and adherence to the normal hours and habits of the patient should be practised, as otherwise dyspepsia and malassimilation occurred. Severe purging and even enemata were dangerous when employed on the day of the operation. Copious hot water ingestion or saline clysters given for a week previous to abdominal sections offered many advantages, as did rectal feeding with easily absorbed foods such as glucose. The anæsthetic must be chosen after study of each individual case, and what was even a more important matter, the method of using it. Where lung complications existed chloroform with oxygen was usually the best anæsthetic. In other cases ether usually in sequence commonly proved suitable, but should be preceded by a dose of atropine. The question of shock, whether due to trauma, rough handling of viscera, or to hæmorrhage, necessitated the adoption of a method permitting variation in the degree of narcosis appropriate to the condition of the patient and the exigencies of the operation. In all depressed states, whether due to pre-existing blood disease or trauma, the chances of the patient's survival or ultimate recuperation were largely a question of the amount of toxæmia itself, in part pre-existent and in part superadded by the introduction of large amounts of an anæsthetic or analgesic. Hence the importance of giving as little as was consistent with the requirements of each case. Preliminary injection of morphine, atropine, and other hypnotic narcotics was valuable both because the nervous system was soothed, psychic shock diminished, and the amount of the general anæsthetic required was materially decreased. Special reference was made to operations involving severe shock—e.g., prostatectomy, panhysterectomy, and intestinal stoppage; and in the last case Dr. Dudley Buxton advocated lavage and constant stomach drainage under intravenous ether infusion, and intravenous ether infusion was invaluable in cases in which considerable loss of blood occurred. The difficulty experienced in operations upon the upper abdomen due to rigidity of the recti was, the speaker believed, commonly due to partial asphyxia, the recti being muscles concerned in respiration, the causes and remedies of which he described. Many cases were suitable for a combined method, preliminary alkaloid injection with spinal anæsthesia or local analgesia followed by general anæsthesia. The dangers which were very real of psychic shock had to be reckoned with whenever spinal and regional analgesia were employed alone, and these were accentuated in the case of the highly nervous and the neurasthenic.

Dr. G. A. H. BARTON said the procedure which he found most generally useful in abdominal operations was (1) a preliminary alkaloidal injection; (2) a rapid induction by means of a little C.E. mixture and ethyl chloride on a Skinner's mask; and (3) maintenance thereafter of anæsthesia by means of open ether given in a special apparatus which he showed. Shock might be present before or develop during operation. Since adopting the method above described he rarely experienced the latter event; morphia or ether did much to abolish it; warmth, position, saline infusion, and oxygen through alcohol were beneficial; pituitrin and adrenalin were useful, but must be used with caution, as their exhibition was not devoid of danger in some circumstances. Strychnine he still considered valuable, but rather as a preventive. In the plethoric, muscular, and alcoholic, ethyl chloride was best avoided in the induction owing to its liability to cause abdominal rigidity in these types; where it occurred chloroform might have to be given, but he generally found oxygen and a light anæsthesia more useful. He spoke of the respiratory difficulties that frequently arose in the edentulous, and said that his practice when the patient had a complete set of upper and lower teeth on vulcanite plates was to leave them *in situ* during the operation. Where lung complications were severe inhalation anæsthesia should be abandoned, and resort had to intraspinal analgesia or intravenous ether. On the whole he deprecated the administration of chloroform in abdominal operations, and particularly when sepsis was present. Septic toxæmia was a cause of degeneration of liver cells and acidosis, and chloroform made the condition worse. Sepsis plus chloroform was, in his opinion, the cause of many of the deaths occurring from fatty acid poisoning a few days after operation in acute appendicitis and allied conditions.

Mr. RAYMOND JOHNSON referred especially to the difficulties met with in certain acute abdominal conditions in which the urgent need of immediate operation rendered any special preparation of the patient impossible. In the presence of toxæmia he entirely agreed with those who held that chloroform should be avoided, and regarded the choice as lying between ether administered by the open method and spinal anæsthesia. With increasing experience he had become more and more impressed by the value of the latter, especially in such cases as acute appendicitis, particularly in young children, in whom the toxæmia was often profound and the mortality still high. Spinal anæsthesia was also particularly useful when the nature of the operation necessitated very complete relaxation of the abdominal muscles. He had found the method very valuable in operating for acute intussusception in young children. The closure of the abdominal incision in these cases was often very difficult if the muscular relaxation was incomplete, on account of the tendency of the omentum and intestine to protrude. Mr. Johnson was specially interested in Dr. Dudley Buxton's remarks on the dangers resulting from great abdominal distension and vomiting in some cases of obstruction, and was of opinion that in some such cases the safest course was to employ local or regional analgesia, and, in the first instance, merely drain a distended coil of gut. In prolonged abdominal operations, such as the combined abdominal and perineal method of removing the rectum, he thought the choice should lie between the inhalation and intravenous methods of administering ether, and that the decision should turn upon the general condition of the patient. Finally, he referred to the occasional difficulty met with in closing vertical incisions in the upper region of the abdomen, and caused by the wide retraction of the divided edges of the posterior layer of the rectus sheath. He was sure that this difficulty was often not due to imperfect muscular relaxation, and suggested that the elasticity of the chest wall was an important element in causing the retraction of the divided aponeurotic layers.

Mr. J. D. E. MORTIMER remarked that, as pointed out some years ago by Macewen, a general anæsthesia, even when pushed to a full extent, did not abolish marked reflex disturbances during some surgical proceedings, particularly in neurotic, alcoholic, and rickety subjects; such might occur in the total absence of preceding asphyxia. He had found a combination of light general anæsthesia with spinal analgesia valuable in such operations as prostatectomy and radical cure of hernia, complete relaxation being obtained and shock avoided without the dangers of a deep narcosis, on the one hand, or of "psychic shock" on the other; which last, if spinal analgesia were employed alone, might be serious.

Dr. J. LEON JONA (Melbourne) said he was pleased to hear Dr. Dudley Buxton advocate the warming of the operating table. This was a point on which surgeons could take a lesson from those who experimented on animals. The maintenance of the body temperature at its normal level during the course of the operation and afterwards would, he felt sure, reduce the amount of so-called "post-operative shock." Another point mentioned by Dr. Dudley Buxton was the preliminary administration of morphia or some such drug, which certainly gave good results and necessitated the use of very much less ether or chloroform. There were a few other points, too, attention to which on the part of the surgeon would undoubtedly be of benefit to the patient, and so assist the anæsthetist in his work, and these were

gentleness in manipulation of abdominal contents, a little more respect for, and better treatment of, the parietal peritoneum, which in many abdominal operations was very much rubbed about by swabs, packs, &c., and celerity of action.

Dr. COPELAND (Toronto, Canada) said: Mr. President, I thank you for the invitation extended to visitors to take part in this discussion. It has given me a great deal of pleasure in listening to Dr. Dudley Buxton's able address. I may say that I am somewhat conversant with the way anæsthetics are given in both Canada and the United States, and that, in general, the methods used there are very similar to those described by the speaker. I am surprised that no mention has been made of nitrous oxide and oxygen anæsthesia, supplemented by morphine and atropine, and perhaps scopolamine. For long administrations, especially in abdominal operations, it seems to be very little used in England. I have seen it given for over four hours in a very difficult abdominal case in the Montreal General Hospital with excellent results. In septic cases, such as an acute fulminating appendicitis, it is the inhalation anæsthetic *par excellence*, causing the slightest degeneration in any of the solid organs, such as the liver and kidneys, or of the blood. If further relaxation be needed than it gives, an exceedingly small amount of ether added will secure it. Nitrous oxide and oxygen seems to me to be ideal in most cases as an introduction to ether. Since coming to England I have been surprised in seeing in many hospitals a most dangerous habit practised by men who ought to know better—namely, that of continually touching the cornea with their fingers to test the eye reflex. In Canada and the United States it has practically been given up, and in some States of the Union it has been declared by the courts to be malpractice, as corneal ulcers have resulted and sometimes blindness. It is the more inexcusable because unnecessary. The same information can be gained by touching the eyelashes. I should like to ask Dr. Dudley Buxton's opinion on this subject. Crile has shown that one of the great factors entering into shock is the loss of carbon dioxide from the blood, caused by over-ventilation of the lungs by excessive breathing caused by pain and other reflex stimuli, which the speaker has mentioned. In the administration of nitrous oxide and oxygen a great deal of shock can readily be overcome, as Crile has shown, by restoring carbon dioxide to the blood, either by rebreathing or, better, by giving a definite amount of carbon dioxide. The patient also comes out of this anæsthetic with extreme rapidity, with a mind comparatively clear, as I have lately had the experience of trying personally.

Dr. J. BLUMFELD and Mr. C. W. M. HOPE also spoke.

In replying Dr. DUDLEY BUXTON reminded his hearers that he had been obliged to limit his remarks, for the time allotted was too short for so large a subject. The great value of Dr. Hornibook's work lay in his proof that chloride of ethyl should be given by an open rather than by a rebreathing method. The corneal reflex was one which he believed should be seldom invoked—it was unnecessary and the eye was often damaged by the finger. The use of nitrous oxide and oxygen in major surgery was, he believed, best restricted to its action in sequences such as before ether. In spite of Dr. Crile's and Dr. Peter's splendid work he was not convinced that the level of narcosis this mixture provided was convenient in the types of cases under consideration. Rapid resumption of consciousness was not commonly an advantage. He certainly believed that chloroform was undesirable in most cases of acute septic disease.

LIVERPOOL MEDICAL INSTITUTION.

Exhibition of Specimens.—Endothelioma of the Heart.—Recent Experimental Investigations in Production of Immunity to Carcinoma.

A MEETING of this society was held on Oct. 31st, Mr. F. T. PAUL, Past-President, being in the chair.

The following specimens were shown:—

Mr. COURTENAY YORKE: Carcinoma of the Œsophagus which had involved both recurrent laryngeal nerves. During life there was complete paralysis of the larynx.

Mr. R. E. HARCOURT and Mr. T. H. BICKERTON: (1) Epibulbar Melanotic Sarcoma in a woman aged 37; and (2) Perithelioma of the Orbit in a woman aged 73.

Mr. ARTHUR J. EVANS: (1) Carcinoma of the Cervix Uteri (two cases); (2) Annular Carcinoma of Iliac Colon; (3) Epithelioma of Mouth; (4) Epithelioma in Appendix Scar; (5) Epithelioma of Penis; and (6) Malignant Testis.

Dr. R. J. M. BUCHANAN and Dr. G. LISSANT COX: Carcinoma of an Accessory Thyroid or of the Thyroglossal Duct.

Mr. D. DOUGLAS-CRAWFORD and Dr. S. W. MCLELLAN: (1) Malignant Disease of Lower End of Œsophagus; (2) Malignant Disease of Colon; and (3) Malignant Disease of Breast—recurrence, X ray treatment.

Mr. W. THELWALL THOMAS and Dr. A. A. REES: (1) Papilloma of Prepuce, early malignancy; (2) Malignant Breast showing Pigmentation due to Hæmorrhage from previous operation; (3) Malignant Bladder and Secondary Glands; (4) Endothelioma of Parotic; and (5) Epithelioma of Scrotum.

Mr. R. E. KELLY: (1) Carcinoma of Small Gut; and (2) Lympho-sarcoma of Neck.

Mr. G. P. NEWBOLT: Carcinoma of the Hepatic Flexure of the Colon.

Dr. NATHAN RAW: (1) Osteo-sarcoma of Lung (secondary); (2) Lympho-sarcoma of Lung; (3) Lung showing Cancer and Tuberculosis; and (4) Sarcoma of the Heart.

Mr. PAUL gave a very instructive photomicrographic demonstration with lantern slides of Epitheliomata of varying degrees of Malignancy. He pointed out how an accurate prognosis could be given from the appearances of the sections. His opinions had been confirmed by the subsequent histories of the cases.

Dr. W. BLAIR BELL showed a Fox Terrier Bitch aged 16½ years. Two years ago a lump appeared in the right inguinal mamma following long-continued mastitis. This lump was excised under β-eucaine anæsthesia. Six months later a recurrence occurred locally. Both inguinal mammæ with all the inguinal fat and glands (which were affected) were then removed under ether anæsthesia. Perfect recovery was made, but now there is a recurrence in a gland lying superficial to the ribs on the right side.

Dr. HUBERT ARMSTRONG read a note on a case of Endothelioma of the Heart, and demonstrated the sections and drawings made for him by Professor Mönckeberg. The tumour was a lymphangio-endothelioma of the *a.-v.* node, causing heart block with Stokes-Adams syndrome in a boy aged 5 years. The case has been reported in full elsewhere.[1]

Dr. J. O. WAKELIN BARRATT read a paper on Recent Experimental Investigations in regard to the Production of Immunity to Carcinoma. He first compared the histological characteristics of mouse carcinomata with human carcinomata, and illustrated his remarks with a series of lantern slides. He also pointed out the differences in the way the two types of malignant disease progress and produce death. He next dealt with the experimental work which has been carried out on mice to produce immunity or to cure mouse carcinoma. Attention was called to the fact that many living tissues from the mouse or the fœtal mouse appear to have the power of producing immunity or of arresting the growth. He emphasised the fact that the tissues used must be living.—Mr. PAUL thought the cure of carcinoma by therapeutic methods was far distant, but hoped that experimental research would be continued with vigour.—Dr. BLAIR BELL believed that a method for treating cancer therapeutically was within sight—if not an absolute cure, at least one which would supplement surgical procedures. He mentioned some of his own attempts to arrest the disease in human subjects.—Mr. RUSHTON PARKER congratulated Dr. Barratt on his lucid paper, and alluded to the excellent work that Dr. Barratt has already done. He was particularly impressed by the modest and restrained manner in which the various facts had been brought forward It was most important that no false hopes should be raised.

[1] Deutsches Archiv für Klinische Medicin, March 13th, 1911.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Cerebellar Tumour treated by Decompression.—Hedonal as an Anæsthetic.

A MEETING of this section was held on Oct. 25th, MR. R. D. PUREFOY, the President, being in the chair.

The PRESIDENT said his first duty was to thank the section and the council for electing him President. He then briefly reviewed the work of the last session, and said that a great many very important papers were read, amongst them being a communication narrating a fatal result in a patient treated with salvarsan.

Mr. A. A. MCCONNELL showed a case of Cerebellar Tumour for which Cushing's sub-tentorial decompression operation had been performed. Before operation the patient had headache, vomiting, partial optic atrophy, vertigo, and ataxia. She was also subject to seizures, in which all the muscles were thrown into a state of tonic contraction. The localising symptoms were: tinnitus in left ear; diadococinesia, which was well pronounced on the left side; and constant deviation to the left side on walking. Optic atrophy was also more marked on the left side. Wassermann's reaction was negative. At the operation a tumour was palpated in the left cerebellar hemisphere. There had been no recurrence of headache, vomiting, vertigo, or tonic muscular spasms since operation. Removal of the tumour was to be attempted at a second operation. Hedonal was the anæsthetic used.—Mr. E. H. TAYLOR said that with regard to operative treatment, his experience had not been so satisfactory as Mr. McConnell's. He emphasised the point that access was not so easy with the patient lying on the side as in the face-down position. He agreed that it was well to expose both hemispheres of the cerebellum, and he thought the bilateral exposure was to be preferred. The case showed the great value of decompression, and in many cases he believed it was better to be satisfied with decompression than at the same operation to proceed to take away the tumour. —Mr. W. PEARSON said it was to be regretted that cases of the kind were not got in earlier stages by the surgeon. When optic atrophy set in the patient's sight could not be restored, and when there was surgical interference it should be carried out before the sight was affected for any time. He considered that even if the growth was believed to be a gumma that was no reason why the case should not be submitted to surgical treatment. He thought there could be no question that the bilateral operation was the most suitable. It was of the utmost importance in intracranial operations to have plenty of room, so as to be able to dislocate the growth. As to whether the whole operation should be undertaken, it was, he thought, better to wait for a second stage in those cerebellar cases; but this could best be judged by the blood pressure.—Mr. MCCONNELL said, in answer to the President, that the cerebro-spinal fluid discharged very copiously from the eighth to the tenth day, and then the sinus closed. He agreed that the two-stage operation was the best. He doubted if the patient would consent to a second operation, and even if she did he was not at present sure what he would do. He agreed that decompression should be done as soon as the sight showed signs of failing.

Dr. H. DE LISLE CRAWFORD reported and analysed 30 cases of Hedonal Anæsthesia. In all full surgical anæsthesia had been obtained, and no death had occurred that was in any way attributable to the drug or the method by which it was administered. The following complications had developed after operation—one case of slight broncho-pneumonia and one of acute œdema. The cases included eight operations for cancer, two for brain compression, and eight laparotomies. The greatest advantages noticed with the anæsthetic were the slight amount of blood lost in head cases and the very marked abdominal relaxation. The anæsthetic was contra-indicated in the young and vigorous, who were not going to be subjected to severe loss of blood and who were not collapsed. In the aged and cachectic, on the other hand, the anæsthetic had been found most valuable.—The PRESIDENT thanked Mr. Crawford for his paper, which very fairly set forth the advantages and disadvantages to be derived from the use of hedonal as an anæsthetic. All who were concerned with abdominal operations well knew the advantage of having the abdominal muscles in a relaxed state.—Mr. W. I. DE C. WHEELER considered that the administration of hedonal could not be praised or condemned until they had more experience of it. Patients very often objected more to the giving of an intravenous injection than to the operation. How chloroform had been given so long in cases where it was contra-indicated he found hard to understand. He mentioned that he had been using omnopon in simple operations, and so far had found it satisfactory.—Dr. T. C. KIRKPATRICK had not seen the method tried, but it seemed to him, from the theoretical point of view, that it was attended with great advantages and some considerable disadvantages. He had seen so many methods of using different drugs as anæsthetics introduced that it made him doubtful, as over and over again, notwithstanding new methods put forward as panaceas, return had to be made to ether. He, therefore, thought that no one had yet sufficient experience to be able to pronounce definitely on hedonal.—Dr. W. G. SMITH said that so far all forms of anæsthetics administered by inhalation, excluding morphia, belonged to the marsh gas series. Local anæsthetics belonged to the aromatic group. He demonstrated by chemical formulas how the various forms were built up, taking marsh gas as a base.—Mr. CRAWFORD, in reply, said his experience was that patients would sooner have the small operation necessary to administer hedonal than to have the mask placed over their face. He considered that it was much more under control than omnopon. He agreed with Dr. Kirkpatrick that the outlook for a new method was not hopeful, but this method had now been taken up in England after having been used for some time on the continent, and he considered it as safe as any other in practice.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Exhibition of Specimens.—President's Address.

A MEETING of this society was held on Oct. 23rd, Dr. J. LINDSAY, the President, being in the chair.

Dr. A. W. RUSSELL showed: 1. Three Ovarian Cysts obtained from cases recently operated on. The first was a multilocular cystoma which had given rise to symptoms of dysmenorrhœa, dysuria, and painful defæcation. The second was a unilocular cyst which had caused great distress and abdominal distension; the heart was displaced upward, the tumour was adherent to the abdominal wall, omentum, bowel, and pelvic organs. The third was a unilocular cyst; the abdominal swelling had existed for two years, and had lately grown much larger. Recovery in all three cases was normal and uninterrupted. 2. Soft Cancer of the Uterine Body. Menopause occurred 18 years ago. Symptoms 1½ years. No loss of flesh. The cancer had involved the myometrium to within 1 mm. of the peritoneum. There were also two small fibroids present in the specimen. A microscopic section was shown.

Dr. W. D. MACFARLANE showed: 1. Uterus with Fibroids undergoing Necrobiotic Changes, two sections of which were shown. 2. Uterus and Fibroids impacted in Pelvis, causing bladder and rectal symptoms. 3. Papilliferous Ovarian Cyst which had given rise to no symptoms. There was no microscopic evidence of malignancy. 4. Gonorrhœal Salpingo-oöphoritis. 5. Uterus with Submucous Fibroid removed post mortem; death had taken place from anæmia and suppurative nephritis.

Dr. W. RITCHIE showed: 1. Uterus with Fibroids. 2. A case of Tuberculous Salpingitis.

The PRESIDENT then delivered his introductory address on the Ovum in Relation to Sterility and Abortion. After thanking the society for electing him to the office of President. Dr. Lindsay claimed to base his address on some problems of obstetrics and gynæcology from the point of view of the general practitioner, who as the family physician was in touch with the state of health and general medical history of the patient. He pointed out the value of the knowledge of family history and of impressions gained in the course of long experience. He said: I propose to submit some impressions relating to the physiology and pathology of early pregnancy along with evidence which

appears to give them some degree of plausibility. It is common knowledge that for some women child-bearing ceases years before the cessation of menstruation; only very occasionally is it continued up to the menopause. It is common knowledge also that there are sometimes long intervals between the birth of children, during which health is normal and there is evidently nothing to prevent conception. What is the nature of this incapacity for child-bearing? Is it pathological or physiological? In cases where the cure of some morbid condition results in the cure of sterility, the sterility is properly designated pathological. But the question is whether the periods of lessened fertility which occur generally among women are of this character; the fact of them being common is against their being so and points to physiological origin. If physiological, we must revise our notions of the relationship between menstruation and ovulation. Ovulation may go on in absence of menstruation, but the converse of this, that menstruation is dependent on ovulation, can this be accepted? Menstruation is abolished when the ovaries are excised, but that effect, however, need not be due to abolition of ovulation, it may be the consequence of cessation of other activities of the genital glands. A menstruating uterus may be found associated with a newly ruptured follicle in the ovary, but the association is not so frequent as has been supposed. Between a follicle lately ruptured, one nearly ripe, and one degenerating, the distinction is not easy to make. At the best opportunities for making observation on the human subject are infrequent; on that account evidence derived from lower mammals has been given more weight than rightly belongs to it. Œstrus or "rut" in animals is homologous with human menstruation, inasmuch as the uterus undergoes similar changes. Œstrus is accompanied by ovulation, and so long as it is always so the inference that menstruation is likewise accompanied by shedding of ova was not unreasonble. It has been found that in some animals œstrus and ovulation occur at different times. In bats œstrus occurs in autumn, but ova are not shed till later, the semen being stored in the uterus during hibernation. Some monkeys menstruate regularly, but it is almost certain that ova are shed only during a brief sexual period. In the research by Leopold and Miranoff it was found that in 12 out of 24 cases menstruation had occurred without ovulation at the period preceding operation. Some of the phenomena of child-bearing postulate a variability at different terms in the production of ova. Ovulation sometimes follows a periodic cycle of its own; usually its periodicity agrees with menstruation. If a large series of births be arranged according to the age of the mothers, a curve is obtained which represents the rise and fall of fertility within the child-bearing period; the curve rises rapidly to its maximum height between 29 and 30 years, and then falls rapidly. Age is not the only influence, it is modified also by a particular age and condition of life. A woman has a child in the early twenties, and after ten years' widowhood marries at 35; her chances of issue are greater than those of a virgin marrying at the same age. Something of this kind is observed in domestic animals. It seems clear with respect to the lower animals, and probably is so with man, that the reproductive function tends to earlier disappearance when it has not been active at the appropriate time. This is a consideration which has not received the attention it deserves from those who have exercised their minds on the falling birth-rate. The length of the educational curriculum affects the educated; for them marriage falls within the period of reproductive life that is less prolific. It is in this class, also, that the lowness of the birth-rate is most conspicuous. Fertility is influenced by general alimentation. Breeders act on the assumption that feeding affects the fecundity of animals. One gets the impression that mode of life does modify fertility, that in particular ill-regulated nutrition with deficient exercise and mental unrest is detrimental to it. In a fertilised ovum, the vitality of which is impaired only, a brief and partial development takes place. Between the fifth and ninth weeks is the time in my experience when abortion takes place, and in the great majority the decidual sac contains no embryo. These sacs are lined with embryonic membrane filled with fluid, the difference between them and the later blood moles being one of degree. Rarely an embryo is found small in proportion to the size of the containing cavity. An outstanding feature of their histology is necrobiosis and by the same process I would ascribe the lack of an embryo in some abortion cases. Malnutrition subsequent to fertilisation plays the chief part.

The President was thanked for his address by the past-president, Dr. A. W. RUSSELL, and this was seconded by Dr. JARDINE, who agreed with Dr. Russell in eulogising Dr. Lindsay's scientific work.

Dr. RUSSELL reported that he had attended the meetings of the International Obstetrical and Gynæcological Congress in Berlin in September as the delegate of the society. He detailed the features of the Congress and noted the hospitality extended to visitors.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Oct. 25th, the President, Dr. A. Freeland Fergus, being in the chair.—Dr. Albert A. Gray gave a lantern demonstration on Otosclerosis, which condition, he said, used to be called dry catarrh of the middle ear, but the more modern work of German observers had shown that the middle ear was not actually affected, and that the condition was due to an abnormal growth of the bone surrounding the oval window, whereby fixation of the footplate of the stirrup was brought about. A preparation from the temporal bone of a woman who had suffered from otosclerosis for 18 months before death (this being the earliest case yet recorded from which specimens have been obtained), showed a ring of diseased bone round the oval window. Microscopic sections of the part showed that the change in the bone was one of rarefaction, the bone having become spongy and containing large spaces filled with marrow. The diseased bone stained deeply, and thus was seen to be sharply delimited from the normal bone which formed the capsule of the labyrinth. Nothing abnormal was observable in the organ of Corti. A preparation from a more advanced case showed similar changes in the bone, with, in addition, extension of the disease to the footplate of the stirrup. Discussing the etiology of otosclerosis, Dr. Gray held that the sharply-defined limitation of the disease negatived the view that the process was inflammatory: the appearance presented was rather that of new growth. On the same ground he would exclude infection from the middle ear as a cause. The disease had been attributed to changes in the blood-supply; and was certainly common in association with such conditions as arteriosclerosis and syphilis, but often occurred independently of them. Probably the view of Manasseh of Strasburg, that otosclerosis is a nerve disease, was correct; only the lack of sufficient fineness in our methods of research prevented the recognition of the nerve lesions in early cases. In support of this view were the facts that tinnitus is a very common early symptom, that the disease is nearly always bilateral, and that the conditions which aggravate it are chiefly those which exhaust the nervous system. As illustrating heredity in otosclerosis, Dr. Gray showed genealogical trees of a number of families many members of which were otosclerotic. In certain of these families the phenomenon of "antedating" was apparent, and in others was seen the very marked effect produced in a later generation by the union of two strains in which the tendency to otosclerosis was only slight. Certain of the family histories suggested also the possibility of an association between otosclerosis and deafmutism.

ROYAL FREE HOSPITAL: APPEAL FOR FUNDS TO PROVIDE A NEW OUT-PATIENT DEPARTMENT.—A new out-patient department and certain other additions have been urgently needed at this hospital for many years, and the recent acquisition of about one acre of land has made the carrying out of these improvements possible. A sum of £50,000 is required, and help is earnestly asked for by Lord Sandwich, the chairman of the committee of management. Donations will be gratefully acknowledged by the honorary treasurers, and should be sent to Messrs. Lloyds Bank, Holborn Circus Branch, or to the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.

LITERARY INTELLIGENCE.—Dr. F. M. Sandwith, the Gresham professor of physic, has prepared for the Research Defence Society a brochure on Sleeping Sickness. It is about to be issued by Messrs. Macmillan and Co.

Reviews and Notices of Books.

An Index of Differential Diagnosis of Main Symptoms. By Various Writers. Edited by HERBERT FRENCH, M.A., M.D. Oxon., F.R.C.P. Lond., Assistant Physician to Guy's Hospital. With 16 coloured plates and over 200 illustrations in the text. Bristol: John Wright and Sons, Limited. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. 1912. Pp. 1017. Price 30*s.* net.

IT is a commonplace that accurate diagnosis is the first essential for the successful treatment of disease. The importance assigned to this subject in the medical curriculum is amply demonstrated by the attention devoted to it in systematic text-books, by the large number of special text-books devoted to the consideration of clinical diagnosis, and by the increasing importance of laboratory methods in the differentiation of some forms of disease. With advancing knowledge, although the problems of diagnosis may become simplified, the actual application of that knowledge in diagnosis involves an accumulated mass of information, rendering the possession of a work of reference almost a necessity to the practitioner. This is probably the cause of the plethora of books on diagnosis. There is always room, however, for original and practical treatment of the subject, and this Dr. French has succeeded in giving us.

We are informed that the work was written in response to requests for an index of diagnosis as a companion to the index of treatment issued by the same publishers. It is undeniably ambitious in its scope, for it attempts to cover the whole ground of medicine, surgery, gynæcology, ophthalmology, dermatology, and neurology. It is also original in its construction, which may be described as a double index, arranged with great care and considerable ingenuity. The principle upon which it is based is the supposition that a particular symptom attracts special notice in a given case. In the body of the book each symptom which can be regarded as a main symptom is carefully discussed, and the various conditions in which it is found are described and differentiated. These symptoms are dealt with in alphabetical order, so as to facilitate reference. Heavy capitals are used for each symptom, and small heavy type for the main headings in the article dealing with it. The diagnosis of conditions giving rise to that symptom is dealt with fully, so that each article is a complete commentary upon the symptom and not a mere catalogue of the conditions in which it occurs. Tables are not infrequently given, but they are simply explanatory or given at the beginning of an article to facilitate reference. The illustrations, which are numerous, are also of a high order, and comprise reproductions of photographs illustrating the facies of disease or showing skin and joint lesions, X ray photographs, diagrams and temperature charts. The coloured plates reproduce with fidelity the appearance of certain of the less common conditions of disease, stained blood corpuscles, and bacteria.

The general index is also a noteworthy feature of the book and a prominent factor in its usefulness. Some idea of its extent may be formed when it is realised that it extends to over 250 pages, each consisting of three columns of closely printed entries. This general index gathers the symptoms together under the headings of the various diseases in which they occur, and is thus complementary to the main body of the book, in which symptoms are individually discussed. The editor, in his preface, lays particular stress upon the importance of using both parts of the book together, for as he expresses it, "While each symptom is considered but once, each disease is likely to come up for discussion under the heading of each of its more important symptoms."

The number of contributors is not large considering the scope of the book, and the editor has contributed a considerable number of articles. He is to be congratulated upon the carefulness with which he has carried out the general scheme, and upon the success which has attended his efforts to produce a thoroughly practical work upon diagnosis. We make no attempt to single out any individual article, or the work of any single contributor, but we may say that we have referred to the book extensively, and have found the articles uniformly helpful and practical. It should be a useful addition to the practitioner's library, and if used systematically as a work of reference, should materially help in the rational diagnosis of disease.

A Manual of Pharmacology. By WALTER E. DIXON, M.A., M.D. Lond., F.R.S., Professor of Materia Medica and Pharmacology at King's College, London. Third edition. London: Edward Arnold. 1912. Pp. 451. Price 15*s.* net.

THE first edition of this work was published in 1905, with the idea of giving the student a simple account of the science of pharmacology, especially in so far as it will enable him to understand the practical application of medicinal agents in the treatment of disease. This, the third, edition, in addition to the above-named idea, endeavours to include such new facts or new interpretations of facts as are of importance to the student of pharmacology, or will assist him the better to understand the use of remedies in the sick room. In localising the seat of action of drugs the author will have none of such terms as "receptors," "myo-neural junctions"; for him "nerve-endings," using it in the old broad sense, is sufficient. Yet the book is nowhere old-fashioned. Pharmacology is an eminently progressive science. In a text-book room must be made for the ever-increasing volume of fact, while the obsolete and inexact and the unimportant must be ruthlessly suppressed. By way of not losing the spirit of the original edition the author has rewritten those parts in which material alterations are required. The chapter on Ergot has been entirely rewritten, but the work as a whole is not materially altered, either in its arrangement or in its subject matter. Indeed, it is difficult to see how the immense accumulation of facts grouped under the title "Pharmacology" could be better arranged and marshalled. No physiological or other classification will suffice.

Of the subjects treated alcohol heads the list, anæsthetics follow, then drugs that act on nerve-endings, on nerve-cells, and those that produce convulsions. Then we have vegetable hypnotics. A purely botanical title for Chapter XII., "Aconitum, Veratrine, Stavesacre," leads us to a physiological one, "Vaso-constrictors and Vaso-dilators," and then cinchona bark has a chapter to itself. We wander through the mazes of antipyretics, the mysteries of purgatives, and the consoling effects of cholagogues, to drugs that affect respiration. By way of the skin we are led to consider the stearoptenes and the essential oils, and far after alcohol comes water, salt action, and the theory of ions, and so we reach inorganic substances, potassium, its allies, its congeners, acids, alkalies, and halogens. After phosphorus and the heavy metals we swing back to the botanical kingdom to filix mas and anthelmintics; to emollients, demulcents, sweetening and colouring agents; and then to ferments, animal extracts, vaccines, antitoxins, and antagonisms.

The manner in which the author has condensed yet explicitly illuminated his subject is excellent. The onus

on teachers who have to impart a knowledge of organic chemistry and physiology such as will enable the student to profit by the great advances in pharmacology, not to speak of the well-ascertained facts, is both great and embarrassing. We have some doubts as to whether the knowledge of organic chemistry acquired by the average student will enable him to follow and appreciate fully the subject of pharmacology as Professor Dixon sets it forth. Be that as it may, Professor Dixon's work should inspire and encourage teachers to prepare their students to profit by the fascinating studies and the practical application to the treatment of disease, which a competent knowledge of pharmacology opens up.

The illustrations are excellent; many of them are blood-pressure or muscular tracings made by the author himself. The status of this work is already established. We wish it with confidence the success that has already attended it in previous editions.

Les Médicaments en Clinique. By Dr. SCHEFFLER (de Saint-Etienne). Paris: O. Berthier. 1912. Pp. 330. Price 4 francs.

THE author defines therapeutics as the science which deals with the action of remedies on the human organism when attacked with a morbid process, with a view to establishing treatment favourable to the sufferer. He states that this definition has the advantage of not confounding the physiological action of a given remedy with its therapeutic action, which may be quite different. We cannot regard this difference as a sound and satisfactory basis for discussing the action of drugs. It is certainly not desirable that the physiological action of a remedy should be lost sight of when using it for therapeutical purposes, for it is often important to be able to recognise when the "physiological limits" of a drug have been reached, for that may be an indication for its suspension. In justice to Dr. Scheffler, however, we may add that he does not act fully on his definition, for the physiological action of some of the drugs receives due attention. In using the word "medicament" Dr. Scheffler employs it in the widest sense, meaning thereby any agent (chemical, physical, or climatic) which is capable of exercising an influence on the diseased organism, and he has dealt with his subject in an essentially practical manner. Neglecting purely theoretical considerations, he has devoted himself to discussing the various merits of different remedies and to pointing out their clinical indications. He divides the "medicaments" according to the principal effects which they produce—that is to say, under the headings of hypnotics, anæsthetics, antispasmodics, sialagogues, bitters, digestive ferments, emetics, purgatives, those remedies which act on the cardio-vascular system, hæmostatics, expectorants, diuretics, and so on. For purposes of actual practice this is a convenient classification, and as the work is apparently intended more for the practitioner than the student the arrangement is a satisfactory one.

The discussions on the actions of the various remedies are given in an interesting manner, but as all the doses are naturally given according to the French pharmacopœia the work is more useful to French than to English readers.

Elements of Practical Medicine. By ALFRED H. CARTER, M.D. Lond., M.Sc. Birm. Tenth edition. London: H. K. Lewis. 1912. Pp. xvii. + 683. Price 9*s.* net.

THE mere fact that this treatise has now reached its tenth edition, and that it has been in steady demand during the 32 years of its existence, is ample testimony to the favour with which it is regarded by students of medicine. The author has carefully revised every page and has re-written and modified much of the text. He well points out that the function of an elementary text-book of medicine lies more in the exposition of the subject from a general standpoint, the details being kept in the background. Thus there would be a better chance of infusing the reading of the student with more intelligence and reflection.

We have so often expressed in our reviews of the preceding editions the value of this work as an introduction to the intricate science of medicine that a minute detailed examination of this edition is hardly necessary. A few criticisms may, however, be made. Thus, pneumonia is not included in the section on specific infectious diseases, but is relegated to the section on diseases of the respiratory system. This is surely not in accordance with the teaching of the present day. In the treatment of enteric fever no mention is made of oil of turpentine—a drug that Sir Robert Simon has found so valuable in comparison with other intestinal antiseptics. Again, in the treatment of cholera the method of Professor Leonard Rogers, of Calcutta, has been overlooked. The administration of the hypertonic saline solution has reduced the mortality from 60 or 70 per cent. to 30 per cent., and even lower in the late epidemic in Italy; the hypertonic solution is combined with the exhibition of permanganate of potassium. In the brief remarks on the treatment of endocarditis, and also in the section of the work dealing with acute rheumatism, no mention appears of the valuable method of preventing endocarditis, as recommended by Dr. Caton, of Liverpool. Attention must also be drawn to the value of large doses of ipecacuanha in the treatment of acute congestion of the liver, the good effect of which was demonstrated years ago by Professor Maclean, of Netley.

We have drawn attention to these few omissions in the text in no cavilling spirit, for the work is valuable, and fully answers to the author's views of the function of an elementary treatise on medicine. On the whole this is perfectly well up to date. The recent discoveries in the etiology of Mediterranean fever have not escaped his notice, and he well draws attention to the characteristic feature of cardiac collapse in beri-beri, which constitutes the chief danger of the disease.

LIBRARY TABLE.

Swedenborg's Animal Kingdom. Parts IV. and V. Together with chapters on The Breasts and The Periosteum. Translated from the Latin by ALFRED ACTON. With 10 plates. Philadelphia: Boericke and Tafel. 1912. Pp. 398. Price $3 net.—The two treatises constituting the major portion of this work deal respectively with the organs of generation and with the formation of the fœtus, and they make up Parts IV. and V. of "The Animal Kingdom" as originally planned. Swedenborg's intention in this great work was to treat of the whole of human anatomy, and include a certain amount of physiology. This first portion was to be followed by a treatise on psychology, which in turn was to lead to a discussion on the soul. Of "The Animal Kingdom" only three parts were published; the remainder was left in manuscript either completed or far advanced. The psychological portion and that dealing with the soul had already been tentatively undertaken in his "Introduction to Rational Psychology," and in a treatise entitled "The Human Soul," two chapters appended to "The Economy of the Animal Kingdom," a work dealing with the blood and the brain, published in 1741, whereas "The Animal Kingdom" appeared 1744–45. The portions now before us were first published at Tübingen in 1849, and were issued in an English translation by Dr. Garth Wilkinson in 1852. Mr. Acton tells us in his preface that his translation, though based on that by Dr. Wilkinson, is by no means merely a revision, and certainly in one point he fills a gap left by Dr. Wilkinson,

for in the preface a full account is given of the relation which "The Animal Kingdom" bears to "The Economy of the Animal Kingdom" and to some of Swedenborg's other physiological writings. As regards the work itself, it is planned as follows: First are given quotations from various anatomists, such as Winslow, Boerhaave, and Heister, dealing with the portion of the body under discussion, and then follows Swedenborg's own "induction" from the facts previously noted. Such inductions are of extreme interest as giving an insight into Swedenborg's views on the continuity of the body and of the various vibrations which affect it. For Swedenborg had indubitably grasped a fact too often overlooked in the eighteenth century—namely, that the body is spiritual as well as material, and with all his strange visionary qualities he possessed a great intellect. He was a mathematician, a natural philosopher, and a theologian; his theory of points as expounded in the Principia may be compared with the latest theory of electrons, and he apparently hit upon, or reasoned out, a nebular hypothesis before Laplace or Kant. Dr. Wilkinson's translation of "Generation" has been long out of print. We hope that Mr. Acton's labours will lead his readers to consult some of Swedenborg's other scientific works in addition to the one before us, for by so doing they should obtain both pleasure and profit.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. XLV., No. 3. September. London: C. F. Clay, Cambridge University Press. Pp. 119–212. Price 5*s.* 6*d.*—The Anticoagulants in Blood and Serum, by B. J. Collingwood and M. T. MacMahon, B.Sc. The authors' purpose was to determine the action of certain anticoagulants on human blood. It is important to note that the nomenclature used is that of Pawlow and Morawitz. Fine threads of glass were drawn at short intervals of time through blood obtained by a puncture with a sterile glass needle from the tip of the finger. This method discovers extremely fine threads of fibrin. Anticoagulant is the term used in preference to antiferment. The authors find that the amount of antithrombin in blood is approximately the same as the amount present in serum. Antithrombinase is present in blood and serum in only small amounts, and hence there is a difficulty in demonstrating its existence. Oxalated blood maintains its power of clotting for several days. It contains a precursor of thrombokinase, prothrombokinase, which exists in a state of suspension, probably in platelets, and which is neither adsorbed nor converted into thrombokinase. Calcium plays a double rôle: (1) in the conversion of prothrombokinase into thrombokinase; (2) in the activation of prothrombin by thrombokinase. The primary factor in the coagulation of human blood is either the *production* of platelets or some *change* in the platelets. The first alternative is correct if platelets are absent from circulating blood, the second if they are present. No evidence was obtained that prothrombin was in a state of suspension in oxalated blood. The authors finally enumerate the various factors of coagulation and the anticoagulants present respectively in freshly shed blood, oxalated blood, and serum obtained in various ways from blood.—Experiments on the Consumption of Sugar in the Normal and the Diabetic Heart, by F. P. Knowlton and E. H. Starling. The authors made use of a method for maintaining the heart and lungs of a mammal for many hours in a state approximating normal, in which the heart can be fed with blood and perform its normal amount of work; and this can be altered at the will of the experimenter. A dog's heart puts out 150 to 350 c.c. per minute when the coronary arteries are fed with arterialised blood under normal conditions of pressure—80–100 mm. Hg—and work. Dogs were used for the most part. The estimation of the sugar was made chiefly in the serum. The method is fully described. The lungs as consumers of sugar may be practically excluded, as the sugar content of the blood was found identical at the beginning and at the end of an experiment during a perfusion time of one and a half hours. The results of the consumption of sugar in the normal heart-lung preparations are given in tabular form. In order to obtain a diabetic heart complete excision of the pancreas in dogs was practised by the quick method of Hédon. The final experiments on the heart were carried out exactly in the same way as was done with normal hearts. The authors then proceed to discuss the nature of the influence exercised by the pancreas on the utilisation of sugar. Some of the results of the experiments are most readily explained by the assumption that the tissues and blood normally contain some substance, the presence of which is essential for the direct metabolisation of sugar in the tissues. Since this substance is absent from the blood and tissues when the pancreas is removed, it seems probable that it is normally produced by this gland and turned into the blood. This raised the question whether it might not be possible to replace this substance in diabetic blood by the addition of pancreatic extracts. The authors' results may be summarised as follows: 1. The heart muscle of the dog, fed with normal blood, consumes about 4 milligrammes of glucose per gramme of heart muscle per hour. 2. This power of consuming sugar is reduced to a minimum, or disappears altogether in hearts taken from animals which have undergone complete excision of the pancreas. 3. The addition of a boiled extract of the pancreas to the blood circulating through the heart of a diabetic animal restores to the latter the power of utilising the glucose of the circulating blood.—A Simple Form of Stromuhr is described by H. Ishikawa and E. H. Starling.—The Oxygen Secretion in the Lung of Man by the Carbon Monoxide Method is considered by H. Hartridge, M.A. The researches of Haldane and Douglas with reference to the occurrence of active oxygen secretion in the lungs of man form the starting point, and the author describes his experiments by the spectroscopic methods of estimating CO. We must content ourselves by stating the conclusions of the author. The tension of O_2 in arterial blood was not found to be greater than that of the alveolar air, although three methods were used of producing O_2-want in the tissues—viz., by (*a*) replacing O_2 by CO; (*b*) lowering the O_2 tension; (*c*) doing work. These results do not confirm the view that O_2 is secreted by the lungs.—The Comparative Osmotic Pressure of the Blood and of the Urine during Diuresis caused by Ringer's Fluid, by George Winfield, M.A. It is known that the injection of Ringer's fluid into the blood-vessels causes a copious secretion of urine even after the secretory activity of the tubules of the kidney has been destroyed. The author gives the composition of the fluid injected into the jugular vein of cats and rabbits after a preliminary withdrawal of 30–60 c.c. of blood. After a period the urine becomes isotonic with blood. For a time the percentage of NaCl in urine exceeds that in the blood. These two values finally become equal. The results are best explained by supposing that the glomeruli separate from the blood a fluid which is isotonic with the plasma—a physical factor. The composition of the filtrate is altered by the secretion of more material into it by the tubular epithelium as the fluid passes down the tubule.—The Oxygen Exchange of the Suprarenal Gland per unit weight of Gland in a unit of Time was

investigated by K. O. Neuman with the Barcroft-Roberts differential blood-gas apparatus on cats and rabbits. The glands have a rich supply of blood, which at a pressure of 130 mm. Hg corresponds to 6–7 c.c. of blood per gramme and minute of gland, which, so far as known, is the highest figure of blood-supply for any normal organ, the nearest being the thyroid with over 5 c.c. per gramme and minute of organ. The pressor effect of adrenalin slightly increases the blood-flow, while the increase of O_2 consumption is three-fold. The oxygen consumed in the kidney in simultaneous and control experiments is greatly diminished. The O_2 consumption of the suprarenal body is about 0·045 c.c. per gramme and minute of organ.—The Function of Lipoids in Tissue Respiration and in the Activity of Oxidases, by H. M. Vernon. The paper deals with the action on perfusion of various concentrations of ethyl, propyl, and butyl alcohols on the gaseous metabolism and oxidase content of mammalian (rabbit) kidneys by methods similar to those already used by the author. He gives a critical account of other experiments and states some general conclusions. He assumes that the respiratory processes of living tissues are probably dependent on the existence of lipoid membranes in the protoplasm.—The Proceedings of the Physiological Society for July 27th, 1912, include the following: W. Cramer and Harold Pringle: On the Coagulation of Blood. Hugh Maclean: The Extraction and Purification of Tissue Phosphatides. F. M. Tozer: On the Presence of Ganglion Cells in the Roots III., IV., and VI. Cranial Nerves. T. Graham Brown: Note upon the Movements of Progression in Man. Hugh Maclean: On Carnaubon.

The Philippine Journal of Tropical Medicine, No. 2, 1912.—This number opens with an obituary notice, illustrated with a photograph, of Dr. Paul Gasper Freer, director of the Bureau of Science at Manila, dean of the College of Medicine, professor of chemistry in the University of the Philippines, and founder and editor-in-chief of the *Philippine Journal of Science*. The first article in the present issue of the journal, which was dealt with in our columns last week, is by Dr. Vernon L. Andrews, associate professor of pathology in the Philippine University, on Infantile Beri-beri, a subject to which we previously drew attention in THE LANCET of Dec. 3rd, 1910. Dr. H. D. Gibbs, assistant professor of chemistry, contributes an extremely interesting paper entitled, "A Study of the Effects of Tropical Sunlight upon Men, Monkeys, and Rabbits, and a Discussion of the proper Clothing for the Tropical Climate." In it are described a number of experiments on various animals and a series of measurements of the skin temperatures, in the tropical sun, of a number of different races, the temperatures under the hair and under various kinds of clothing, and the subcutaneous temperatures of monkeys and rabbits, together with some observations of the physiological effects of sunlight. It appears that while the skin of the darker races absorbs heat more rapidly, the radiation is more rapid than from the skin of the lighter-coloured people; and since, in the full sun, the proportion of the body exposed is less than the proportion in the shade, the darker skinned races may for this reason be somewhat better prepared to withstand the sun. Clothing for human beings for protection from the sunlight should afford the greatest shade without obstructing air currents which carry off evaporated moisture. Dr. Gibbs's experiments demonstrated the superiority of white material over coloured as a reflector of the sun's rays. The ideal condition is attained by "the shade of a white umbrella lined with green cloth and supplemented by as little clothing as possible." A broad-brimmed white helmet of little weight, the band of which is so arranged that the frame does not touch the head and allows the free passage of air currents, is the best substitute for the umbrella. The next paper is on Typhoid Fever in the Philippine Islands from the Sanitary Standpoint, being an address delivered at Manila before the Primera Asamblea Regional de Medicos y Farmaceuticos in February last by Dr. Victor G. Heiser, director of health and professor of hygiene in the Manila Medical School. It appears that about 400 cases are reported yearly in Manila, though some doubt is cast in certain cases upon the diagnosis. But the disease undoubtedly is prevalent, and steps are very necessary to prevent its spread. Dr. Heiser thinks that examination of the blood of the patient by Widal's method is desirable, and for this purpose he urges that a specimen of the blood should be forwarded to the Bureau of Health in every instance in which suspicion of typhoid fever arises. The means for dealing locally with the infection are fully described. The last contribution is furnished by Dr. Carrol Fox, assistant director of health and associate professor of hygiene in the Manila Medical College, and is entitled "Some Common Siphonaptera of the Philippine Islands." This paper is based largely upon a study of about 450 fleas obtained during an anti-rat campaign in Manila, and it appears that Xenopsylla cheopis is practically the only rat-flea present in the Philippine Islands, or at least in Manila.

New Inventions.

UTERINE BOUGIE INTRODUCER.

THE purpose of this instrument is to enable medicated bougies to be introduced into the cervical canal of the uterus. The bougies are made of a basis of ol. theobrom., to which drugs such as protargol and ichthyol can be added as desired. The introducer, as shown in the illustration, is a metal tube 8 in. long, with an external diameter of ¼ in. Inside the tube is a flexible "ramrod." The "muzzle" end of the instrument is slightly bent, the angle being about half that of a uterine sound. This permits the passage of the instrument through the smallest size Fergusson speculum. To use it, the ramrod is slightly withdrawn and a bougie inserted down the muzzle. The instrument

is then passed either through a speculum or guided along one finger in the vagina, like a uterine sound, until the end reaches the external os. Keeping it firmly pressed against the os, the ramrod is then driven home, so that the bougie is forced into the cervical canal. To prevent the escape of the bougie (which is more likely to happen if the bougie is made too hard) a tampon is rapidly inserted into the vagina so as to press against the cervix. With a little practice the manœuvre is easily accomplished and causes no discomfort to the patient. In treating chronic catarrh, bougie treatment has, it is claimed, decided advantages over applications of liquids used on dressed Playfair probes. The bougie takes time to melt, so that the mucous membrane remains bathed in the solution of the drug used for some time. Moreover, the bougie can, if necessary, be pushed right up to the internal os, a feat often impossible with a dressed probe.

The instrument has been made for me by the Holborn Surgical Instrument Co.

C. WILLETT CUNNINGTON, M.B., B.C. Cantab.

Finchley, N.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 9, 1912.

The National Insurance Act.

THE report of the Council of the British Medical Association to the Divisions of the Association and the Representative Body upon the present position of the medical profession in regard to the National Insurance Act is concluded in our columns this week. The important debate of the Council upon the report of the State Sickness Insurance Committee to the Council, having that position for its subject, was continued to such a late hour on Thursday, Oct. 31st, that we were compelled to go to press before the last section of the document was reached. As in this section the situation is considered in relation to the future corporate action to be taken, it may be considered to be the most valuable part of the document. The facts that no very definite conclusions are arrived at, and that no very clear advice is given, may be taken as a proof of the grave difficulties which surround the matter. Entirely new conditions are suggested by the law of the land under which much professional work will have to be done. It is practically impossible to say for certain what effect these conditions will have either upon individual practitioners or upon practice as a whole, and whether a man prophesy well or ill he must expect to be flatly contradicted by those who, upon similar evidence, or lack of evidence, have come to contrary but equally honest and earnest conclusions. The report of the Council in our opinion is an exceedingly fair one. If complaints are made that it is colourless it must be remembered that this is a proof of fairness, inasmuch as there can be no doubt whatever that the medical profession is considerably divided in its opinion as to whether the enhanced offer of the Government should be accepted, or as to whether service should be refused under the Act.

The issue, however, which the report of the Council of the British Medical Association places before the Divisions of the Association and the Representative Body is not simply shall service be given or refused under the Act, for in no instance do the Council consider that service should be given unless certain safeguards, which are set out in the report, can be obtained. The Council invite the members of the Association to choose whether they will refuse service under the Act or whether they will give the panel system a trial under defined conditions. These conditions are that all the contracts should be of a provisional nature and approved of by the Council of the Association, while the forces and specially available funds of the Association will be used to secure fair terms in different areas, and an organisation of a Public Medical Service is to be held in readiness as a substitute. The members of the Association at their divisional meetings will also have before them in the Council's report a well-balanced statement of the alternatives to working the Act, and these are stated in moderate language. It is recognised that in some areas a panel of practitioners could be obtained under the proposals of the Government. An attempt on the part of the Government to establish a salaried service in certain districts is criticised, and the possibility of this being done with a measure of success is recognised; while the fact that a third alternative—namely, the suspension of medical benefit in districts where a panel cannot be formed—might thrust the medical profession back upon the situation of having to make bad terms for themselves with medical clubs, under the new title of Approved Societies, is brought forward and faced. The obvious reply, it seems to the Council, to all the ills which might follow upon either of these departures would be the establishment of a Public Medical Service entirely under the control of the medical profession. Such a service would, in the opinion of the Council, secure the independence of the medical profession; and this in a sense is true, but requires the qualifying phrase "as far as such independence can be secured." It has been a fundamental principle, underlying the whole of the fight of the profession against the provisions of the Act, that the independence of the profession should be maintained, but professional independence means one thing to one man and another to another. We are all clear that the sanctity of our relations with our patients must be undefiled; and we are all aware that questions of professional conduct cannot be settled without grave risk to medical men by lay tribunals; but to hold these views strongly is not necessarily to demand that a Public Medical Service must brook no interference in spirit or in detail from the public concerned. The medical profession cannot as a matter of fact divorce itself from the social scheme, and no one really wants to attempt this.

The Council leave the decision as to future action in the hands of the members. They have put before the Divisions a clear statement in which the advantages and disadvantages of the varying modes of action are set out with great fairness; they have not considered it their mandate to give any lead further than that supplied by the fullest information which they have been able to obtain upon every point. They could not in their report define exactly the limits of medical benefit, for no one knows them; they could not say what the result will be of the additional capitation fee of 6*d*. provided for the domiciliary treatment of tuberculous patients, for no one knows this; they are clear that the demands for mileage should undoubtedly come from some centralised fund, believing that rural practitioners in a mixed urban and rural district would absorb much of the fund by mileage at the expense of the urban practitioner, while in a very scattered district mileage might absorb the whole of the fund. On the matter of professional discipline they consider that the proposed tribunal for inquiry into complaints against doctors (Regulation 51) would appear to offer a measure of security for a fair inquiry, but they add that no regulations affecting the position of a doctor on the panel can be satisfactory to the profession which do not provide for a right of appeal to a medical tribunal. This last recommendation we support

strongly; not a week goes by that we do not hear or read of some mistake made by a lay authority or administrator on a medical question, and the error is always to the prejudice of the medical practitioner.

The Detection and Treatment of Early Phthisis.

Dr. DAVID B. LEES in delivering the Bradshaw Lecture before the Royal College of Physicians of London this week (see p. 1278) chose a subject which is particularly appropriate at the present time. The sanatorium benefit of the Insurance Act is now being worked in a limited degree by the profession. If the terms offered by the Chancellor of the Exchequer be accepted the general practitioner will have a share in treating cases of pulmonary tuberculosis, and presumably he will have to decide whether or no any particular case shall be sent to a sanatorium. It is, therefore, of the highest importance that he should have a good knowledge of the diagnosis and treatment of the disease in its early stage. There is some prospect of many of the patients suffering from this disease being treated at institutions other than the general hospitals, and unless some provisions are made by the medical schools, students will not have the opportunities, which they should enjoy, of studying the disease by the observation of actual cases. The important discussion which took place at the Royal College of Physicians of London last week, an account of which we publish in another column, draws attention to the pressing needs of the situation. Dr. LEES states that the abolition of pulmonary tuberculosis is only possible on two conditions—first, that every practitioner shall learn how to detect the disease at its first appearance, "long before any bacteriological evidence is available," and secondly, that a method of treatment can be employed in the patient's own home which will be simple, harmless, completely effective, and yet inexpensive. We entirely concur with him that if these two conditions can be satisfied the problem is largely solved.

Dr. LEES then proceeds to an interesting discussion of these questions. Speaking first of diagnosis, he maintains that the great majority of general practitioners do not feel justified in giving a definite diagnosis of "incipient pulmonary tuberculosis" until the pathogenic bacillus has been found in the patient's sputum. He considers this is unfortunate, as he insists that "the disease is often present for weeks or months, and may have spread extensively in the lungs before a positive bacteriological report can be given." We confess that up to a certain point we are in sympathy with the general practitioner, especially in consideration of recent legislation. The practitioner may well hesitate to notify the case before the diagnosis is confirmed by bacteriological examination, but that need not prevent him from placing the patient under suitable home treatment. We naturally presume that other auxiliary methods of diagnosis have also yielded negative results. Dr. LEES, when describing the examination of patients, confines himself almost exclusively to one method—namely, percussion. He describes certain dull areas which may be detected over the upper part of the lungs which when present justify a very strong suspicion of tuberculous infection, existing or past. Without entering into any discussion as to the pathological basis that underlies these indications we would suggest that diagnosis on percussion only presupposes the highest skill in this method of examination. Dr. LEES has cultivated this skill, and has been successful in eliminating the personal equation, which, we think, plays a prominent part in unconsciously influencing most of us when attempting to arrive at a conclusion if percussion only is employed. If a practitioner can arrive at this degree of "erudite touch," well and good, but we venture to doubt whether many practitioners can reach such a stage of technical precision. If they cannot, the older dictum of an assemblage of signs and progression of symptoms is to be preferred.

Passing on to the treatment of the disease, Dr. LEES also confines himself mainly to one method—namely, that of continuous inhalation of certain volatile drugs possessing antiseptic properties. We quite endorse his views that by inhalation of such remedies cough and expectoration can be greatly relieved. When these symptoms are not subdued they cause a considerable amount of exertion and discomfort to the patient, and lead to a marked degree of auto-inoculation. It is remarkable in some cases when there has been a considerable amount of fever how the fever will subside when morphia or some other sedative has been successful in staying the cough. Dr. LEES'S method has much to recommend it, and the clinical facts which he adduces and the results which he quotes demonstrate that continuous inhalation on such lines may be a valuable adjunct to the other directions on which he insists—rest, attention to diet, the state of the digestion, and careful disinfection of the mouth. In a letter which we publish in another column, Mr. S. N. BRUCE relates an instance illustrating the beneficial results which may follow the adoption of these therapeutic measures. The Bradshaw Lecture of this year is distinguished by its eminently practical character. If Dr. LEES'S methods cannot be accurately achieved by others, nevertheless they will tend to induce practitioners to lay more stress on certain methods of examination and to draw attention to a useful method of treatment.

Problems in Infection and their Solution.

THE Huxley lecture was delivered last week at the Charing Cross Hospital by Professor SIMON FLEXNER, Director of the Rockefeller Institute, New York, who took for his subject Some Problems in Infection and its Control. By virtue of the splendid experimental researches of himself and his pupils Professor FLEXNER is to-day one of the acknowledged leaders of American medicine, and as he chose for his lecture a subject on which he is a recognised authority—one, further, which is among the burning questions of contemporary medical science—his opinions and conclusions command attention and respect. Professor FLEXNER took occasion to observe how the successful transmission of an obscure disease to the lower animals has always been followed by a flood of knowledge, arising thus suddenly and calculated to sweep away misconception and error. In the case of syphilis this has proved

eminently true. It seems but yesterday that the delightful visit of the English physicians to their *confrères* of the Parisian School in the spring of 1905 took place, a visit rendered memorable in the minds of many by the fact of their then seeing for the first time the newly discovered spirochæta pallida, as well as the successfully inoculated syphilitic monkeys of the Pasteur Institute. In these few years our knowledge of syphilis has increased by mighty strides, and now that the spirochæta has yielded to artificial culture, and can be studied and, as Professor FLEXNER says, "exploited," under laboratory conditions, we may confidently await still further discoveries and, no less confidently, their application to the problems of preventive and remedial therapeutics. It is in connexion with acute poliomyelitis, as every one knows, that Professor FLEXNER is entitled to speak with unique authority, by reason of his devotion to the experimental pathology of that disease during the last four or five years. Acute poliomyelitis, an old and long familiar disease, suddenly assumed unwonted importance when, about the year 1905, it started in epidemic form literally to encircle the globe. Epidemics of greater or less severity have raged on both continents, as well as on the islands of the sea. Here again, in spite of awakened interest and concern, it was only when the successful transmission of poliomyelitis to monkeys was announced by LANDSTEINER and POPPER in 1909, and corroborated by Professor FLEXNER himself, LEVADITI, LEWIS, and others, that the darkness was suddenly illuminated. From that hour the scientific study of the affection dates, and within the last year or two our knowledge has increased by geometrical progression. A great deal is due in this connexion to the admirable series of experimental researches emanating from the Rockefeller Institute. It has been conclusively demonstrated that the organism, or virus, of acute poliomyelitis is ultra-microscopic and filterable, yet its activity and infectivity are truly remarkable, for, as Professor FLEXNER pointed out in his lecture, one 1000th of a cubic centimetre of a filtered 3·5 per cent. suspension of a spinal cord of an infected monkey suffices to cause infection and paralysis in another monkey.

Considerable attention was devoted by the lecturer to the matter of filterable viruses. They constitute the morbid agents of some 18 known diseases, and form a vastly interesting group. Of these diseases, three at least are the unfortunate possession of the human race—viz., poliomyelitis, yellow fever, and the less known dengue. The others are maladies of domestic animals, and among them may be enumerated rabies, hog cholera, foot and mouth disease, vaccinia, cattle plague, and chicken plague. These viruses are all ultra-microscopic, and the only proof of their presence that we have as yet is their power to produce infection. Their modes of entry into the host are very various, but if recovery takes place a high and enduring degree of immunity ensues. Under this simple statement of fact lies the potentiality of the ultimate discovery of actively immunising and possibly curative sera. As far as poliomyelitis itself is concerned, its virus is notably resistant; it survives in dust for a very long time, it does not perish with the disintegration of animal tissues in which it may be present, it is comparatively indifferent to the action of many chemicals, and it can be carried in an active state by the survivor of an attack of poliomyelitis for many months. It may, indeed, be found in carriers who have never demonstrably suffered from the disease. Professor FLEXNER has shown by elaborate experiments that the virus in all probability enters the organism by the nasal and pharyngeal mucosa; in fact, for man, the nasal mucous membrane is the site both of ingress and egress of the poliomyelitis virus. He remarks, further, that the mucosa of the throat and nose is much more vulnerable in children than in adults, which explains the common occurrence of the disease in children, and brings it into line with diphtheria, measles, scarlet fever, and meningitis. The question of the possibility of insects carrying the infection, and of certain domestic animals, is only now being faced seriously and rigorously. Already it has been shown that bed bugs can carry the virus in an active state for many days, and possibly also the stable fly. But very much patient work yet remains to be accomplished in this connexion. Professor FLEXNER drew special attention to the important fact that the person or animal immune to poliomyelitis carries in his blood principles that neutralise the virus, and that they may be present at least as long as 25 years after the original attack. Possibly they persist throughout life. A simple test is thus suggested for the diagnosis of abortive cases of the disease, as well as for isolated, sporadic, and anomalous cases, should it be necessary.

It cannot be doubted that the ultimate gain to mankind from this accumulation of carefully devised experiments and properly utilised clinical and pathological material will be immense. We are within measureable distance, it may be said without exaggeration, of the revelation of the exact nature of the virus, be it bacterial or protozoal or what, and the solution of the problem of a cure for the disease does not appear so remote as it once did. The recently issued memorandum on acute poliomyelitis by the Local Government Board shows that the department is fully alive to the importance of the subject, and in it the permanent extension of the provisions of the Infectious Disease (Notification) Act to that affection is recommended to all local authorities.

Annotations.

"Ne quid nimis."

THE DISPOSAL AND UTILISATION OF SEWAGE SLUDGE.

EVER since the water-carriage system for dealing with the refuse of towns has been adopted the disposal of the sludge—i.e., the solid matter which must be settled and removed from the liquid sewage before the latter can be further purified—has been the source of endless trouble and anxiety to local authorities, not only in this country, but also abroad. Up to the present all sewage sludge has either had to be dumped on land or taken out to sea, and has in either case caused considerable expense, whilst being liable to spread infection. Attempts at utilising it on land have been futile, and the Royal Commission, which made a great number of experiments on these lines, reports that for farming purposes it is practically worthless, whether used in the wet state or after being dried. Recently at Oldham, a town of 100,000 inhabitants, new plant, invented by Dr. J. Grossmann, was installed which promises to work a revolution in the practice hitherto

adopted. The principle of the process is to recover from the sludge the fats which it contains and to use the residue after further treatment as a useful manure. The sewage in Oldham amounts to about 4,000,000 gallons a day and is a purely domestic effluent, containing, however, about half a ton of cotton waste besides other solid matter, which has to be removed by the screens. In addition there is a good deal of grease. Dr. Grossmann calculates that half a million tons of soap go into the sewage of this country every year, which represents about 200,000 tons of grease. Dr. Grossmann's method enables practically all the grease present in the sludge to be recovered. After removal of the grosser materials the sewage is led into settling tanks, where the heavy insoluble matters settle out. After the sediment is drained it is conveyed to special driers. Comparing Oldham with Bradford, where a large amount of wool washing is done, it is calculated that Bradford's sewage contains 8000 tons of grease per annum as compared with 200 tons in Oldham. In Bradford about half of the grease is recovered and the sludge question is left unsolved. The process is essentially one of desiccation supplemented by treatment with superheated steam and acid, by which greasy matters are removed. The dried sludge, however, before the grease is removed from it can be used for the purpose of fuel in the drying plant itself, which may be a useful alternative in districts where fuel is difficult to obtain. For manurial purposes the removal of grease is of great importance, for sewage sludge containing grease is unworkable and clogs the soil. As it is, the manure is described as a brown, odourless, perfectly sterilised powder, and agricultural experiments appear to be proving its fertilising value. So far we are not in possession of any particulars as to the cost of treatment, but the process from beginning to end is said to be inoffensive. It would be interesting also to know what course is pursued in regard to the industrial products—e.g., cotton waste—which is screened off. The cost of the plant for Oldham is about £12,000. The Oldham new product contains about 2 per cent. of ammonia, equal to 8 per cent. of sulphate of ammonia with some potash (2·4 per cent.) and phosphates (3·5 per cent.), and as it comes from the machines is worth from £2 to £3 per ton. Thus all the sewage is got rid of and there is no need for carrying matter to the sea. Manchester spends many thousand pounds a year to convey its sewage sludge out to the Mersey Bar at Liverpool, where it is tipped into the sea. The value of the grease to be recovered from Oldham's sewage is estimated at £1500 a year, and it is therefore not surprising to learn that Germany is sending a deputation to inspect and report on the process. When Longfellow wrote—

> Nothing useless is, or low,

he had not in mind the application of science to the waste products of civilisation, but such work as is chronicled above is a comment on the poet's text.

PROBLEMS IN STREET TRAFFIC.

THE rapid growth of motor traffic is rendering the question of the public safety an acute one, and, happily, the subject is receiving such close attention by public authorities and the people themselves that we may fairly expect some serious attempt will be made before long to improve traffic regulations on lines which shall reduce those increased risks to life and limb which motor traffic has introduced. There can be little doubt that street accidents are increasing to a grave extent, and what is more alarming is that the nature of these accidents is far more serious than those which commonly occurred in the old horse traction days. It was said a short time ago that much of the fresh danger was due to mixed traffic, and that as soon as the horsed vehicle was banished from the road and the traffic became entirely composed of motors the streets would be safer. That, we think, has not been proved by experience, for there never was a time when disasters in the streets were so frequent, and some persons estimate that 90 per cent. of the traffic of the streets is now due to motor vehicles. It follows upon this supposition that the street traffic problem is an entirely new one, and the sooner human ingenuity contrives to deal with it in the interests of public safety the better. It is manifestly absurd to base a new system of control upon regulations which answered for horse traffic. The motor engine has completely revolutionised London traffic, and nothing short of revolutionary measures are required to deal with it, if the pedestrian public is to be properly safeguarded. If that is the case it is reasonable to demand a fresh official inquiry into the question in regard to its present-day aspects. We are glad to learn that there is a strong probability of such a committee of inquiry being shortly appointed. Confusion can only arise out of the numberless suggestions made in the press and elsewhere by persons who think they possess novel and practicable ideas. If cow-catchers, compulsory stopping places, more refuges, new planning of the fairway, automatic checks upon excessive speed, and so forth, are admissible as measures of protection, a select committee of inquiry upon the subject, composed of taxi-cab, motor-bus, motor-lorry representatives, and street traffic authorities, could surely deal with it incisively and waste very little time about formulating reasonable palliative measures. Mere patchwork will not do; the recommendations, to be of any real good, will probably have to be drastic and involve great alterations in the present methods of control. The crossing of a busy thoroughfare will always be attended with some danger, but the pedestrian has a right to something more than a mere sporting chance of doing it safely. In any case he will have to be reasonably watchful, but the process could be shorn of much of that terror and fear now admitted to be commonly experienced by a good many people, at all events in the metropolis. It is time that the considerable convenience and luxury of locomotion which the motor has brought into human affairs should be subordinated to considerations of public safety.

ARTIFICIAL DISLOCATION OF THE TESTICLE.

AN article published by M. Guibé, of Paris, in *La Presse Médicale* of Oct. 2nd, calls attention to a curious device resorted to by Russians in order to escape the conscript duties required of them. Altogether 49 instances have been recorded by military surgeons in Russia, all but three of this total occurring in Jews. Their device consists of an artificial displacement of one testicle, usually the right, into the subcutaneous tissue of the inguinal region. The organ is found lying just above Poupart's ligament, to which its long axis is parallel, and immediately external to the outer inguinal ring. It is freely moveable upwards and outwards, but cannot be replaced within the scrotum or the inguinal canal. The spermatic cord is felt with difficulty, and there is some divergence of opinion as to the actual course which it follows. The corresponding half of the scrotum, though empty, is obviously large enough to contain the missing gland. In one or two cases a small scar was noted immediately below the external inguinal ring; in others there were dense adhesions in the same spot. In either case the obstruction so produced sufficed to prevent the gland from returning to its normal site. That this anomaly is artificial in origin is suggested by its occurrence in "epidemic" form among men who are notoriously unwilling to undertake the duties of conscript military service. It is, however, on internal evidence that the final proof of its

nature rests. First there is the fact that the displaced testicle of the unwilling conscript is normal in size, while the spontaneously dislocated gland nearly always exhibits definite atrophy in persons of 20 years of age and upwards. Again, the mobility of the artificially displaced testicle is limited by dense adhesions, in so far as its return to the scrotum or inguinal canal is concerned; whereas in spontaneous dislocation there is a noteworthy absence of adhesions. Finally, the large, flabby scrotum of the self-mutilated patient contrasts with the small, atrophic sac of the man whose testis has failed to descend. To these proofs of divergence from the spontaneous type of testicular ectopia M. Guibé adds another, the absence of inguinal hernia in all the cases recorded by the Russian surgeons; pointing out that the man who, wishing to escape military service, finds himself the fortunate possesser of a valid excuse in the shape of an inguinal hernia, would have no need of a second artificial disability. So far, it appears that no one has confessed himself guilty of a deliberate displacement of his testicle; nevertheless, M. Guibé suggests that there is no difficulty in imagining the steps by which the operation is completed. It is easy enough to lift the normal testicle from the scrotum to the height of the external ring; its further displacement to a position above and external to the ring, such as it occupies in the conscript cases, might perhaps be accomplished by a series of manipulations, perhaps by sudden force. As to maintenance of the abnormal position, this is possibly achieved by different means in different cases; by the wearing of an inguinal truss in some, by the injection of some irritant in order to provoke adhesions in others. Whatever the means adopted, there seems to be little doubt as to the fact that in artificial displacement of the testicle the unwilling conscript has hit upon a singularly ingenious plan for escaping his uncongenial duties.

THE EARLY DIAGNOSIS OF RENAL TUBERCULOSIS.

IN the *Interstate Medical Journal* for October Dr. W. F. Braasch, of St. Mary's Hospital, Rochester, Minnesota, has published a useful paper on the early diagnosis of renal tuberculosis. He finds that many patients are not referred to the surgeon for operation until the disease is advanced. That the disease is allowed to go on so long is due to three causes: (1) the disease is frequently not recognised by the general practitioner; (2) it is not generally known that surgery is the best treatment; (3) there is a widespread belief that the disease can frequently be cured by other means than surgery, particularly by tuberculin. It would be well if every case of *diurnal* irritability of the bladder persisting for several months and accompanied by more or less pyuria were regarded as tuberculous until the contrary is proved. In a case of persistent irritability of the bladder the urine should be carefully examined. If no pus can be found, even on microscopic examination, tuberculosis can usually be excluded. If pus is present in considerable quantity the early diagnosis of tuberculosis depends on demonstrating the presence of the tubercle bacillus. The bacillus can be found in practically every case of renal tuberculosis if looked for repeatedly. If it cannot be found microscopically in a catheter specimen, and there is reason to suspect its presence, a guinea-pig should be inoculated with the urinary sediment. In early infection this test is practically infallible. If this test is not available other signs should be looked for. Nodular enlargement of the epididymis or prostate is valuable evidence. If this is found in a young adult without recent venereal infection or nocturnal frequency of micturition renal tuberculosis may safely be diagnosed. The cystoscopic picture of a tuberculous bladder is not necessarily pathognomonic, but can usually be recognised by an experienced observer. With regard to treatment, patients to whom tuberculin was administered for several months did not show any marked improvement. Surgical treatment in the majority of cases proved curative. Early nephrectomy offered the best chance of cure. In most cases of bilateral infection the second kidney becomes infected some time after the first, and the infection is evidently transmitted from the latter. The risk of severe vesical infection and of transmission of the disease to other parts of the body is too great to warrant delay in operating.

THE CURABLE FORMS OF ANGINA PECTORIS.

AT a meeting of the Académie de Médecine de Paris on Oct. 1st M. Ch. Fiessinger pointed out that the prognosis of angina pectoris is not so bad as is generally supposed, and varies in different forms.[1] Of these he distinguishes six, which may be thus arranged in order of decreasing gravity: (1) angina due to diseases of the coronary artery; (2 and 3) the angina of aortic disease and myocarditis; (4) the angina of interstitial nephritis; (5 and 6) the angina of aerophagia and of obesity. All these forms have the primordial characteristic of angina pectoris—provocation of the pain by walking or effort, which shows that the left ventricle is overtaxed. At the moment when fatigue reduces the power to overcome the peripheral resistance the crisis occurs. However, in many patients in whom the myocardium fails angina does not occur. Hence there must be some other factor—a nervous element. Probably there is neuralgia of the peri-aortic nerve fibres, for according to physiologists the cardiac muscle is insensible. The treatment of angina may be considered under the headings of general and particular (for each form). Under the former M. Fiessinger describes three methods, of which only the first is well known. They are: (1) administration of nitrites and morphine; (2) prolonged rest in bed, on the value of which he has recently insisted[2]; and (3) small meals of one dish every two hours, so that seven are taken in the day. This avoids distension of the stomach, which has such a manifest effect on angina. Usually immediate improvement occurs. There is only one form in which little benefit is derived from the treatment—angina due to syphilitic disease of the coronary arteries. In this specific treatment is indicated. The treatment special to each form may now be described. 1. The coronary disease which causes angina is usually syphilis. In atheroma complete obstruction of the coronary arteries seldom occurs. Many old men have considerable atheromatous narrowing of the coronary arteries without ever suffering from angina. In young subjects angina is usually due to syphilitic disease of the coronary arteries and timely treatment will usually cure it. During the attacks theobromine and trinitrin are the best remedies. 2. Angina due to aortic insufficiency may, like the preceding, be due to syphilis, and then the treatment is the same. The pain may be due to excess of intracardiac pressure which follows the regurgitation. If the patient is syphilitic it will be relieved by specific treatment. Whatever the cause, iodide of potassium in gramme doses will prove useful. Sometimes it will be necessary to reduce the dose to 30 or even 20 centigrammes, especially if the kidney is affected. The remedy should usually be given for 20 days a month. Sufficient rest in bed, prolonged, if necessary, for six weeks to two months, will reduce the myocardial irritability. 3. Angina due to myocarditis usually ceases, as Huchard showed, with dilatation of the heart. As a rule the movement is little affected; there may be some tachycardia—a pulse of 88 to 90. Digitalin in small doses, about one-tenth of a milligramme, for three or four days a week with theobromine may

[1] THE LANCET, Oct. 12th, 1912, p. 1046.
[2] See THE LANCET, Jan. 28th, 1911, p. 254.

produce amelioration. Rest in bed for a month is the best method of relieving the pain. 4. In interstitial nephritis the angina may be spontaneously cured by dilatation of the auricle, the result of an effort. Thus two patients had high arterial tension and after an effort (in one case running, in the other carrying a travelling-bag) a regurgitant mitral murmur appeared suddenly, and orthodiagraphy showed considerable dilatation of the auricle. Eight and 14 months respectively have elapsed since this accident, and they are much better. The nephritis and high arterial tension persist, but the action of the heart is regular, and there are no more crises. No doubt the improvement is due to the diminution in intraventricular pressure consecutive to the insufficiency of the mitral valve. In cases in which relief is not given in this way —and they are the greater number—a lacto-vegetarian diet, small meals, purgatives, theobromine, and digitalin usually give relief. 5 and 6. In the angina of the obese and of those addicted to aerophagia recovery is the rule. It is remarkable how rapidly angina disappears in an obese person when his weight is reduced. The system of small meals will bring about this reduction. Every person suffering from angina whose weight exceeds the normal should be dieted. The effect is immediate. If there is interstitial nephritis as well as obesity amelioration is also produced, but recovery is much rarer. Obese persons who have been cured of angina should exercise great prudence in diet. The angina of those addicted to aerophagia appears to be due to elevation of the diaphragm by the distended stomach interfering with the work of the heart. Small meals followed by bicarbonate of sodium and absorbent powders should be prescribed.

THE FACULTY OF MEDICINE OF BAHIA.

WE are as a nation, perhaps, somewhat too prone to under-estimate the enormous strides in medical progress that are being made all over the world. It is only comparatively recently that the medical profession in this country has been awakened by the reports of English medical visitors to the United States and Canada to anything approaching an adequate realisation of the very advanced status of matters medical in these countries. These visits are happily becoming much more frequent, and the laudatory reports of those who have made them are no longer regarded merely as "travellers' tales." We are well aware that in the Far East, too, Japan has in some respects set an admirable example of medical progress, and the work of the Wellcome Research Laboratories at Khartoum is familiar to us. It may not, however, yet be realised that in the Latin-American countries also a great advance has been made. An interesting article in the *Archivos Brasileiros de Medicina* for July continues its account of the medical institutions of Brazil, with an illustrated description of the Faculty of Medicine of Bahia. A Royal charter was granted by King John VI. in 1808, for the institution of a medical clinic in the military hospital of the city of Salvador, which began its operations in the buildings of the ancient Jesuit College situated exactly on the site now occupied by the principal part of the new faculty. In 1815 the Medico-Chirurgical College came into existence from the former school, and a five years' course was substituted for the previous four years' course. It is gratifying to note that among its professors were two graduates of the University of Edinburgh, Dr. Avelino Barbosa and Dr. Silva Rodrigues. In 1832 the Medico-Chirurgical College became the Faculty of Medicine of Bahia. A great part of the faculty buildings were destroyed by fire in 1905, including an excellent library of 20,000 volumes containing many rare and valuable works. The central part of the new faculty, which arose literally out of the ashes of the former one, is taken up with the administrative buildings. There is a magnificent auditorium seating 2000 persons. The faculty possesses the following laboratories:—The institute of chemistry, the laboratory of natural history, the institute of anatomy, the laboratory of histology, the laboratory of pathological anatomy and histology, the institute of bacteriology, the Nina Rodrigues medico-legal institute, the laboratories of physiology and therapeutics, the institute of hygiene, the anatomico-pathological museum, and the library, which already contains about 12,000 volumes. The clinical teaching of the faculty takes places at the Hospital Santa Isabel, the Maternidade, the Hospicio S. João de Deus, and the Clinical Institute. From the illustrations a good idea may be gained of the severe but fine character of the architecture which it would seem must perfuse the academic spirit upon all that come under its influence. Such at least is the impression given by a perusal of the article and a scrutiny of the illustrations.

GUY'S HOSPITAL AND THE SOUTHWARK GUARDIANS.

THE controversy between the Southwark guardians and Guy's Hospital, which has undergone recrudescence, is usually introduced to public attention in an obscured form by paragraphs headed "Another Guy's Hospital Scandal," or in some similar manner equally calculated to beg the question at issue. A letter written by the superintendent of Guy's Hospital to the clerk of the Southwark guardians, which has been published in the lay press, puts the matter clearly and fairly from the point of view of the authorities of the hospital, and it is perfectly open to the public, including subscribers to the hospital and to other institutions of the same character, to form their own judgment upon the facts thus shown or to make such further inquiry as they may deem necessary. None would be more heartily willing that they should do so than those directly interested in the efficiency of Guy's Hospital and in maintaining its high reputation as a charitable institution. But it is easier to condemn unheard than to arrive at a just decision upon the evidence, and naturally, if regrettably, the letter of a hospital superintendent tabulating facts and recording arguments for submission to a board of guardians is less entertaining reading than a paragraph which hurls accusations of callousness to suffering at random, and announces anything so stimulating to the imagination as a "scandal." The alleged "scandal" arises from the following conditions, which we describe from the materials made common property by those engaged in the controversy referred to. The accommodation at Guy's Hospital is limited to 602 beds and cots. When all these are full no more patients can be taken into the wards of the hospital, and from time to time patients in urgent need of hospital treatment are refused admission and are referred to the guardians. The guardians do not maintain an infirmary in Southwark, but outside their area three or four miles away. At Mint-street (for men) and at Westmoreland-road (for women) there are workhouses, but in them there is no accommodation for cases, whether sent from Guy's Hospital or from elsewhere, which require to be treated in a sick ward or are in such a condition that their removal by ambulance to Dulwich may prove dangerous. Before treatment at the hands of the Poor-law authorities patients have to go through prescribed formalities of investigation at a relief office closed between noon and 3 P.M. Cases which have recently formed the subject of discussion owing to their having been refused admission at Guy's Hospital in the circumstances described include a woman dying from erysipelas, a woman who met with an accident and fractured

her skull, and a man suffering from cancer. On behalf of the hospital (which, by the way, is a large ratepayer as well as an institution relieving the rates) it is urged that its hospitality is limited by its income, and that the guardians, who have by law imposed upon them responsibility for the welfare of the poor in their union, should provide proper infirmary accommodation within their limits to supplement the necessarily restricted efforts of the hospital. The guardians appear to repudiate any such responsibility as that suggested. If we may gather their opinions from an "interview" with their chairman published in the *Daily News and Leader* of Oct. 30th, they consider that the hospital is there to take in patients, that it has got to do it, and if it does not they are no concern of theirs. Mr. W. Savage, the gentleman referred to, is reported as having said: "We say that the hospital people have no right to send people away from the hospital to the infirmary in a dying condition, however near or far the infirmary may be. It is not for the Southwark ratepayers to find an institution to supplement Guy's Hospital." Upon the facts of the case as thus stated we suggest that the public must form its own opinion and take whatever course it thinks right. It is open to it to provide more beds by its charity in Guy's Hospital, or to insist upon the guardians providing them in an institution which it will be asked to pay for, not out of charity, but through the levying of a rate in the district most concerned. We would request the public at any rate to remember that to keep beds free for "urgent" cases such as those which have formed the topic of discussion necessarily means refusing others probably equally "urgent." "Urgency" is not easy to define, but it must be conceded that it frequently arises before the patient becomes threatened with immediate death. For example, it is "urgent" to operate while operation may be effectual. The occupants of 602 beds in such a district as Southwark constitute a mere drop in the ocean of its human misery and sickness. If a bed had been there for the man dying from cancer or for the woman dying from erysipelas, it would have been remaining empty at the expense of someone perhaps equally ill, perhaps less so, but by that very fact susceptible of successful treatment. Nobody wishes for a scandal, no one less so than the governing body of a hospital; but if scandal is to arise when a hospital refuses to take in a particular case, having no bed to accommodate it, will scandal-mongers be better satisfied when they hear of refusal in another case when the hospital admittedly has beds unoccupied awaiting more "urgent" contingencies? It is for the public, or for the section of it that will apply itself to considering all the aspects of the question, to decide the matter.

Lady Lowther is holding a St. John Ambulance Association class at the British Embassy, Constantinople, the lecturer being Mr. S. Osborn, F.R.C.S., of the St. John's Gate Medical Staff, and the examiner, Dr. F. G. Clemow, physician to the Embassy.

THE case of Stevens *v.* the British Medical Association has been so fully reported that all our readers are familiar with the details. The jury having disagreed upon their verdict were discharged. We are debarred from comment by the fact that the case may be re-tried.

Mr. H. E. W. Hoffmeister, M.B., B.C. Cantab., surgeon-in-ordinary to Princess Henry of Battenburg, has been appointed a member of the Fourth Class of the Royal Victorian Order.

A COMMITTEE on Colour-vision and Colour-blindness has been appointed by the British Association, consisting of Professor F. Gotch, Professor Leonard Hill, Professor A. W. Porter, and Professor A. D. Waller, with Professor E. H. Starling as chairman and Dr. F. W. Edridge-Green as secretary.

THE King has appointed Professor Frederick Hobday, F.R.C.V.S., to be an honorary veterinary surgeon to his Majesty.

WE regret to announce the death in London, on Nov. 4th, after an operation, of Dr. L. W. Darra Mair, medical inspector to the Local Government Board.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on Oct. 31st, Sir THOMAS BARLOW, Bart., K.C.V.O., the President, being in the chair.

The following gentlemen, having passed the required examination, were admitted Members of the College: John Davis Barris, M.B. Camb., L.R.C.P., and Ardeshir Koyaji Contractor, M.D. Lond., L.R.C.P.

Licences to practise physic were granted to 95 gentlemen who had passed the necessary examinations.

In conjunction with the Royal College of Surgeons of England, the Diploma in Tropical Medicine was granted to Mr. E. S. Marshall.

The PRESIDENT announced that the Weber-Parkes prize for 1912 had been awarded to Mr. John Alexander Douglas Radcliffe, M.B., pathologist to the King Edward VII. Sanatorium, Midhurst. He also announced that the adjudicators for the next essay in 1915 were: Sir J. Kingston Fowler, K.C.V.O., Dr. F. J. Wethered, and Mr. L. S. Dudgeon, F.R.C.P. The subject chosen was an original research on the treatment of pulmonary tuberculosis with substances which are especially antagonistic to the specific organism and its products. This work must have been chiefly carried out since the year 1911.

The following communications were received:—(1) From the Secretary of the Royal College of Surgeons of England, dated July 25th and Oct. 22nd, reporting proceedings of the Council of that College at meetings held on July 25th and Oct. 11th. (2) From the University of Dublin, dated August, 1912, thanking the College for sending delegates to the bicentenary celebrations and for presenting an address on that occasion. 3. From the Curator of the City and County Museum, Lincoln, thanking the College for presenting to the museum the collection of antiquities made by the late Dr. O'Neill.

Discussion on Sanatorium Benefit.

Dr. W. J. TYSON, with reference to sanatorium benefit under the Insurance Act, called attention to the great importance of associating the treatment of tuberculosis in all its phases with the existing hospitals, in order that medical students might have every access to the study of the disease and its treatment. He said that a scheme for working the benefits existed in numerous districts, but the subject of the education of practitioners and students in regard to tuberculosis had not been fully discussed. Pulmonary tuberculosis was likely to be dissociated from our general hospitals and medical schools. Could anything be done to prevent this? The study of the disease ought to be linked up with the schools, and the general hospitals should have beds for patients suffering from tuberculosis. He thought the College should take the lead in drawing attention to the danger of students passing through the schools without opportunities of studying the disease. An appeal ought also to be made to the Government to see that this great question was put on a proper basis. The county of Kent had drawn up a comprehensive scheme which Dr. Tyson described.

Dr. H. P. HAWKINS stated that the authorities of St. Thomas's Hospital had decided to form a central institution for tuberculosis in order that students might study the cases. They were about to start a dispensary separate from the hospital with a whole-time officer. It was practically a new institution for the treatment of tuberculosis in the borough of Lambeth.

Dr. H. W. G. MACKENZIE drew attention to the danger to the general hospitals of the withdrawal of tuberculous patients. Students would have to go to the special hospitals if some other arrangements were not made. Tuberculosis had to be studied in connexion with other morbid conditions of the body. Subscriptions to the chest hospitals were falling off, and these hospitals seemed likely to perish from inanition. He referred to the great services that these hospitals had done to the public, and if these institutions were closed a great measure of combating the disease would be lost. He explained the measures which were to be adopted at the Brompton Hospital both in regard to the treatment of patients in association with the surrounding boroughs and with regard to a teaching scheme whereby practitioners and students could obtain tuition for from three to six months.

Sir RICHARD DOUGLAS POWELL pointed out that as at present arranged the treatment of tuberculous patients was to be carried out by "specialists" in various districts and patients were to be drafted into sanatoriums. He greatly regretted that the patients should be taken out of the hands of the general practitioner. He laid stress on the necessity of studying pulmonary tuberculosis in connexion with general diseases, but up to the present no proper provision had been made for tuberculous patients at general hospitals. He would prefer to see general practitioners told off to attend patients in small sanatoriums. In large cities resident medical officers would be necessary, but a visiting staff should also be attached. But in the first instance the general practitioners must be properly educated with regard to tuberculous disease. A central bureau should be established for a scientific study of tuberculosis and periodically making public the knowledge acquired.

Dr. C. THEODORE WILLIAMS drew attention to the unsatisfactory arrangements that had been made in connexion with some of the dispensaries which had been scattered through the country. He strongly advocated keeping the dispensaries in connexion with existing large hospitals.

Dr. W. C. WILKINSON drew attention to the financial problem of the tuberculosis question, and said that the funds provided could only under the present proposals supply treatment to a limited number of patients. He thought that dispensaries should be mainly for treatment and not for prophylactic purposes.

Dr. NORMAN MOORE also urged that the profession is now concerned with a movement which might greatly affect the teaching at large hospitals, and he hoped that the College would appoint a committee to consider the matter.

Mr. F. E. FREMANTLE referred to the appointment of medical officers of health as tuberculosis officers, who were asked to advise as to the steps which should be taken in their districts. Those officers were isolated from the profession in their having to give advice to lay bodies. The College could carry great weight with county councils. He referred to the endowment for research contained in the Act.

The PRESIDENT urged that the Government and the public should be enlightened on the subject, especially for purposes of education. If a committee were appointed he thought that the whole subject of the sanatorium benefit should be considered.

Dr. DAVID W. FINLAY proposed that the whole subject should be referred to the committee which had been previously appointed in the College to deal with the Insurance Bill, with the addition of Dr. Tyson. This was seconded by Dr. NESTOR TIRARD and carried.

Other Business.

A report was received and adopted from the Committee of Management dated Oct. 8th. The report was as follows:—

1. That the following institutions, which have been visited by members of the committee and reported as fulfilling the requirements of the Board, be added to the list of institutions recognised by the Examining Board in England for instruction in the subjects respectively mentioned:—*Chemistry and Physics:* Leamington Spa Municipal Technical School; King William School, Castletown, Isle of Man. *Biology:* West Bromwich Municipal Secondary School; King Edward's School, Birmingham. (These schools are already recognised for chemistry and physics.)
2. That the Naval Medical College at Greenwich be added to the list of laboratories recognised for the course of instruction for the Diploma in Public Health.
3. That the East Ham Borough Isolation Hospital be added to the list of fever hospitals recognised by the Examining Board in England.
4. That the course of clinical instruction in Lunacy by Dr. E. D. Macnamara at Peckham House be recognised as fulfilling the conditions of Clause 8, paragraph XXI., Section II, of the Regulations of the Examining Board in England.

Dr. Norman Moore was re-elected a member of the Committee of Management.

Books and other publications presented to the library during the past quarter were received, and the thanks of the College ordered to be returned to the donors. The Harveian librarian (Dr. NORMAN MOORE) announced that the President had presented some letters of Harvey. He proposed that a most hearty vote of thanks be accorded to the President for this splendid and uncommon gift, and that as a special mark of the appreciation of the Fellows the thanks be given under the College seal. This was carried with acclamation.

After some further formal business the President dissolved the Comitia.

THE FLANNELETTE QUESTION.

Mr. Ellis Griffith, M.P., on behalf of the Home Secretary, received at the Home Office on Oct. 31st a deputation organised by the National League for Physical Education and Improvement. The League has petitioned the Home Secretary asking that there shall be certain alteration in the law regarding the sale of flannelette, and that it shall be illegal to describe as safe any material of this class which does not conform to some standard test to be set up by the Home Office. The terms of this petition were dealt with in our columns of July 13th this year.

The members of the deputation were Professor Howard Marsh (Master of Downing), Sir Lauder Brunton, Sir Henry Craik, Sir Ernest Clarke, Mr. H. J. Martin, Mr. J. E. Walker, Sir Edward Brabrook, Dr. T. N. Kelynack, Mr. Theodore Taylor, M.P., Sir Harry Nuttall, M.P., Mr. C. T. Needham, M.P., and Miss Halford, secretary of the League.

Professor MARSH, speaking on behalf of the deputation, said there was an appalling loss of life entailed by the frequency with which people's dresses, especially children's, got alight. For 40 years he had been connected with St. Bartholomew's Hospital, and the most painful cases with which they were called upon to deal were those of children between 2 and 10 years of age who were brought there practically burnt to death under conditions of torture one could scarcely describe. After referring to the very safe properties of flannel Professor Marsh said that flannelette was very different from flannel in that it was most highly inflammable, and mentioned that a little time ago a dressing-gown of flannelette worn by a nurse at his own house caught fire, with the result that she was soon in flames from head to foot. Pointing out that it was becoming quite common to sell flannelette with the special emphasis that it was safe, Professor MARSH said there ought to be legislation so that things could not be sold as safe unless they complied with a certain test.

Sir LAUDER BRUNTON said one of the most terrible deaths was that of burning. If a man took a baby from the mother's arms and threw it into the fire everyone would say hanging was too good for him. But the suffering was just the same in the case of a child burnt to death in its clothing. The National League desired legislation, which would make accidents of the kind much less common.

Mr. T. C. TAYLOR, M.P., said many coroners had taken a deep interest in this matter, and desired legislation which would prevent the sale of flannelette under misleading designations. Many were desirous that it should be illegal to sell it at all unless it had been made non-inflammable. Seeing that science had discovered how to make it non-inflammable it should be made non-inflammable, and the sale should be prohibited unless the material should pass a test of non-inflammability.

Mr. GRIFFITH, in reply, agreed that it was the duty of the legislature to lessen loss of life, especially when it was practicable to do something. The committee which considered this matter on behalf of the Home Office practically confined their recommendations to the question of misrepresentation, whereby highly inflammable stuff was put on the market with such descriptive terms as "Non-inflammable" and "Safe." This practice had increased lately, because one of the objects of the committee had been to impress upon the public the danger of the material, with the result that those who made it felt it more necessary in their own interests to describe it as "safe." The Home

Office were advised that it was impracticable to deal with the matter by an amendment of the Merchandise Marks Act. There was also considerable difficulty about a standard test of non-inflammability which could be set up for legislative purposes. Of course, it would be possible to pass an Act of Parliament to say that no article should be sold for human clothing unless it was above a certain standard of inflammability. The Home Secretary appreciated the views of the deputation, and would be quite ready to consider any plans which they might submit to him for dealing with this evil.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 95 largest English towns, with an aggregate population estimated at 17,639,881 persons at the middle of this year, 8736 births and 4748 deaths were registered during the week ending Saturday, Nov. 2nd. The annual rate of mortality in these towns, which had been 13·7, 14·2, and 13·4 per 1000 in the three preceding weeks, rose to 14·0 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these 95 towns averaged 13·5 per 1000, against 14·8 in London during the same period. The death-rates in the several towns last week ranged from 3·0 in Newport (Mon.), 6·4 in Wimbledon, 7·0 in Blackpool, 7·1 in Swindon, and 7·3 in Barrow-in-Furness, to 19·6 in Liverpool, 20·1 in Barnsley, 22·0 in Middlesbrough, 22·7 in Bootle, and 23·8 in South Shields.

The 4748 deaths from all causes in the 95 towns were 231 in excess of the number in the previous week, and included 449 which were referred to the principal epidemic diseases, against 426 and 421 in the two preceding weeks. Of these 449 deaths, 224 resulted from measles, 107 from infantile diarrhœal diseases, 43 from diphtheria, 36 from whooping-cough, 24 from scarlet fever, and 15 from enteric fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases last week was equal to 1·3 per 1000, and coincided with the rate recorded in the two previous weeks. The deaths attributed to measles, which had steadily increased from 67 to 189 in the five preceding weeks, further rose to 224 last week, and caused the highest annual death-rates of 1·9 in Birmingham and in Liverpool, 2·0 in Rhondda, 2·1 in West Ham, 2·2 in Swansea, 2·3 in Newcastle-on-Tyne, 2·4 in Middlesbrough, 2·7 in St. Helens, 2·9 in Bootle, 3·3 in West Hartlepool, and 3·5 in Tynemouth. The deaths of infants under 2 years of age referred to diarrhœa and enteritis, which had declined from 153 to 103 in the four preceding weeks, slightly rose to 107 last week, and included 34 in London and its suburban districts, 11 in Birmingham, 10 in Liverpool, and 8 in Manchester. The fatal cases of diphtheria, which had been 56, 49, and 48 in the three preceding weeks, further declined to 43 last week; 9 deaths were recorded in London, 4 in Portsmouth, 4 in Bradford, and 3 in Birmingham. The deaths attributed to whooping-cough, which had been 33, 36, and 40 in the three preceding weeks, fell to 36 last week; of this number 7 were registered in London, 3 in Bristol, and 2 each in Swindon, Birmingham, Nottingham, Liverpool, Wigan, and Manchester. The deaths referred to scarlet fever, which had been 26, 29, and 21 in the three preceding weeks, were 24 last week; 5 deaths occurred in London, 5 in Birmingham, 4 in Liverpool, 2 in Manchester, and 2 in Huddersfield. The fatal cases of enteric fever, which had been 11, 22, and 20 in the three preceding weeks, declined to 15 last week, and included 2 in Portsmouth.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had steadily increased from 1512 to 2258 in the ten preceding weeks, had further risen to 2278 on Saturday last; 278 new cases of this disease were admitted to these hospitals during last week, against 322, 345, and 283 in the three preceding weeks. These hospitals also contained on Saturday last 903 cases of diphtheria, 601 of measles, 243 of whooping-cough, and 55 of enteric fever, but not one of small-pox. The 1221 deaths from all causes in London were 5 fewer than the number in the preceding week, and were equal to an annual death-rate of 14·1 per 1000. The deaths referred to diseases of the respiratory system, which had been 282, 326, and 240 in the three preceding weeks, rose to 274 last week, and were 104 in excess of the number recorded in the corresponding week of last year.

Of the 4748 deaths from all causes in the 95 towns last week, 184 resulted from different forms of violence, and 410 were the subject of coroners' inquests. The causes of 39, or 0·8 per cent., of the total deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, and in 70 other smaller towns. The 39 uncertified causes of death last week included 7 in Liverpool, 6 in Birmingham, 3 in St. Helens, and 2 each in Stoke-on-Trent, Coventry, Sheffield, Hull, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 18 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons at the middle of this year, 1079 births and 675 deaths were registered during the week ending Saturday, Nov. 2nd. The annual rate of mortality in these towns, which had been 14·1, 13·6, and 14·4 per 1000 in the three preceding weeks, further rose to 16·1 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 14·1 per 1000, against 13·5 in the 95 large English towns during the same period. Among the several Scotch towns the death-rates last week ranged from 7·9 in Hamilton, 9·0 in Clydebank, and 9·8 in Govan, to 17·5 in Glasgow, 17·9 in Greenock, and 22·7 in Dundee.

The 675 deaths from all causes were 72 in excess of the number in the previous week, and included 47 which were referred to the principal epidemic diseases, against 32 and 43 in the two preceding weeks. Of these 47 deaths, 16 resulted from infantile diarrhœal diseases, 14 from whooping-cough, 9 from diphtheria, 5 from scarlet fever, 2 from measles, and 1 from enteric fever, but not one from small-pox. These 47 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·1 per 1000, against 1·3 per 1000 in the 95 large English towns. The deaths of infants under two years of age attributed to diarrhœa and enteritis, which had been 28, 10, and 16 in the three preceding weeks, were again 16 last week, and included 6 in Glasgow, 3 in Dundee, and 2 in Kilmarnock. The deaths referred to whooping-cough, which had been 11, 6, and 8 in the three preceding weeks, rose to 14 last week; 7 deaths were registered in Glasgow, 2 in Paisley, and 2 in Hamilton. The fatal cases of diphtheria, which had increased from 5 to 12 in the six preceding weeks, declined to 9 last week, of which number 4 occurred in Glasgow. The 5 deaths attributed to scarlet fever last week coincided with the average in the four preceding weeks. The 2 deaths referred to measles were recorded in Glasgow and Motherwell respectively, and the fatal case of enteric fever in Aberdeen.

The deaths referred to diseases of the respiratory system in the 18 Scotch towns, which had steadily increased from 62 to 105 in the four preceding weeks, further rose to 139 in the week under notice; 35 deaths were attributed to different forms of violence, against 23 and 29 in the two previous weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an aggregate population estimated at 1,154,150 persons at the middle of this year, 539 births and 406 deaths were registered during the week ending Saturday, Nov. 2nd. The annual rate of mortality in these towns, which had been 17·6, 16·5, and 17·8 per 1000 in the three preceding weeks, further rose to 18·3 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these Irish towns averaged 17·1 per 1000; in the 95 large English towns the corresponding death-rate did not exceed 13·5, while in the 18 Scotch towns it was equal to 14·1 per 1000. The annual death-rate in the several towns last week was equal to 18·5 in Dublin (against 14·1 in London), 16·8 in Belfast, 17·0 in Cork, 20·4 in Londonderry, 47·4 in Limerick, and 15·2 in Waterford, while in the remaining 16 smaller towns the mean death rate did not exceed 15·8 per 1000.

The 406 deaths from all causes in the 22 Irish towns

were 13 in excess of the number in the previous week, and included 65 which were referred to the principal epidemic diseases, against numbers declining from 45 to 39 in the three preceding weeks; of these 65 deaths, 36 resulted from measles, 14 from diarrhœal diseases, 6 from scarlet fever, 4 from diphtheria, 3 from enteric fever, and 2 from whooping-cough, but not one from small-pox. These 65 deaths from the principal epidemic diseases were equal to an annual death-rate of 2·9 per 1000; the death-rate from these diseases last week in the 95 large English towns was equal to 1·3 per 1000, while in the 18 Scotch towns it did not exceed 1·1 per 1000. The deaths attributed to measles, which had been 20, 20, and 19 in the three preceding weeks, rose to 36 last week, and comprised 22 in Limerick, 12 in Belfast, and 2 in Dublin. The deaths referred to diarrhœa and enteritis, which had been 13, 14, and 5 in the three preceding weeks, rose to 14 last week, all but one of which related to infants under 2 years of age; 6 deaths were recorded in Dublin, 5 in Belfast, and 3 in Cork. The fatal cases of scarlet fever, which had been 4, 1, and 6 in the three preceding weeks, were again 6 last week, and comprised 3 deaths in Dublin, 2 in Belfast, and 1 in Tralee. Of the 4 deaths attributed to diphtheria, which were equal to the number in the previous week, 2 were registered in Dublin, 1 in Belfast, and 1 in Dundalk. Two of the 3 deaths referred to enteric fever occurred in Dublin and 1 in Londonderry; the 2 fatal cases of whooping-cough were recorded in Dublin and Ballymena respectively.

The deaths referred to diseases of the respiratory system in the 22 Irish towns, which had steadily increased from 49 to 78 in the four preceding weeks, declined to 74 in the week under notice. Of the 406 deaths from all causes, 130, or 32 per cent., occurred in public institutions, and 9 resulted from different forms of violence. The causes of 16, or 3·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent.

THE SERVICES

Royal Navy Medical Service.

In accordance with the provisions of His late Majesty's Order in Council of August 11th, 1903, Surgeon Joseph Glaister has been allowed to withdraw from His Majesty's Naval Service with a gratuity.

Royal Army Medical Corps.

Colonel T. J. R. Lucas, C.B., has taken up duty as Assistant Director of Medical Services at Headquarters of the Jubbulpore and Jhansi Brigades.

Lieutenant-Colonel A. E. Tate, honorary physician to H.E. the Viceroy and Governor-General of the East Indies, has been appointed Assistant Director of Medical Services to the Allahabad and Fyzabad Brigades, relieving Lieutenant-Colonel M. O'D. Braddell, who has resumed his original appointment in charge of the Station Hospital at Cawnpore. Lieutenant-Colonel H. E. Cree, commanding the Military Hospital at Subathu, Sirhind Brigade, has been selected for the increased rate of pay under Article 317 of the Royal Warrant. Lieutenant-Colonel P. C. H. Gordon has been transferred from the Western Command to Jersey, and appointed Senior Medical Officer and placed in charge of the Military Hospital at Fort Regent, in succession to Lieutenant-Colonel J. M. F. Shine. Lieutenant-Colonel E. Eckersley, Deputy Assistant Director-General, A.M.S., has been placed under orders for a tour of service in India with the Seventh (Meerut) Division of the Northern Army. Lieutenant-Colonel A. A. Sutton, D.S.O., Senior Medical Officer, Sierra Leone Protectorate, has arrived home on leave of absence from West Africa.

Major F. J. W. Porter, D.S.O., has been selected for appointment as Specialist in Operative Surgery to the Ninth (Secunderabad) Division of the Southern Army in India. Major S. de C. O'Grady has been transferred to the Home Establishment from Egypt on the termination of his leave of absence, tour expired. Major J. S. Gallie has been appointed to hold charge of the Military Hospital at the Guards' Depôt, Caterham. Major L. Humphry has been appointed to the Eastern Command for duty. Major F. W. Begbie has embarked for a tour of service in India. Major H. W. Grattan has taken up charge of the Convalescent Enteric Fever Depôt at Naini Tal on vacating the appointment of sanitary officer to the Eighth (Lucknow) Division. Major J. G. Churton, at present serving at the Military Hospital, Bangalore, has been granted leave of absence home from India for six months. Major G. B. Crisp, deputy assistant director of Medical Services (Mobilisation) to the Fifth (Mhow) Division, has been appointed Senior Medical Officer on board the transport s.s. *Dufferin*, leaving Bombay for Southampton on Nov. 21st. Major J. C. B. Statham has taken up duty as Specialist Sanitary Officer in the Sierra Leone Protectorate.

Captain W. A. Spong has been selected for appointment as Embarkation Medical Officer at Karachi. Captain C. G. Browne has been appointed for duty in the Southern Command Captain R. Storrs has been transferred from Portsmouth to the Military Hospital at Tidworth, Salisbury Plain. Major W. S. Crosthwait has taken up duty at the Military Hospital, Fermoy, on the termination of training at Mal Bay Camp. Captain M. P. Leahy has been granted six months' leave of absence home from India. Captain J. W. Houston has been appointed a Specialist in the Prevention of Disease and placed in charge of the Bacteriological Research Laboratory at the Bombay Brigade Headquarters, Colaba. Captain R. S. Smyth has been appointed for duty to the Southern Command. H.E. the Commander-in-Chief in India has approved an exchange for duty between Captain R. F. M. Fawcett, serving at Jhansi, and Captain D. P. Johnstone, serving at Chester. Captain W. E. Marshall has arrived home on leave of absence from Egypt. Captains F. A. McCammon, E. W. M. Paine, and G. H. Stevenson have been appointed for general duty on board the transport s.s. *Plassy*, which left Bombay for Southampton on Nov. 7th. Captain A. E. B. Wood has been transferred from Hong-Kong to North China. Captain R. L. V. Foster has taken up duty at the Military Hospital, Tidworth, Salisbury Plain, on transfer from Crownhill. Captain A. N. Fraser has been selected for appointment as Specialist Sanitary Officer in the Straits Settlements, embarking during the ensuing trooping season. Captain H. G. Sherren has been transferred from Aldershot to Bordon. Captain A. C. H. Suhr has arrived home on leave of absence from Malta. Captain K. A. C. Doig has been transferred from the Eastern Command to Alderney. Captain W. Egan has been reverted to the Home Establishment on termination of his leave of absence from India. Captain W. W. Boyce, recently serving at the Military Hospital, Lahore, has been granted leave of absence home for one year on the recommendation of a Medical Board. Captain R. C. Wilmot has been selected for appointment as Medical Officer to the School of Musketry and Specialist in Ophthalmology at Hythe. An exchange in the roster for service abroad has been approved by the Director-General between Captain H. G. Gibson and Captain P. S. Stewart; the former officer will accordingly return home during the present relief season. Captain W. W. Browne, specialist in physical training to the Colchester District, has been placed under orders for a tour of service with the Sixth (Poona) Division of the Southern Army in India. Captain B. H. V. Dunbar has been transferred from Mosney to Belfast. Captain R. G. Meredith has joined for duty at Aberystwyth on transfer from Lichfield. Captain H. V. Bagshawe has embarked for a tour of service in Egypt. Captain J. Farbairn has been appointed for duty in the Irish Command upon completion of the promotion course at the Royal Army Medical College. Captain J. R. Yourrell has taken up duty at the Military Hospital at Rangoon on transfer from Mandalay.

The following Lieutenants have been placed under orders for a tour of service with the Northern Army in India:—W. Bissett, T. A. Weston, W. L. E. Fretz, P. Hayes, and P. M. J. Brett. Lieutenant J. K. Gaunt has been placed under orders for a tour of service in Straits Settlements. Lieutenant J. S. Levack has been transferred from Moor Laws Camp to the Military Hospital at York.

Indian Medical Service.

Colonel R. B. Roe has been selected for appointment as Assistant Director of Medical Services to the Sirhind and Jullundur Brigades in the Third (Lahore) Division of the Northern Army in India in succession to Colonel R. W. S. Lyons, transferred to Divisional Headquarters.

Lieutenant-Colonel W. D. Sutherland has been appointed Lecturer in Forensic Medicine under the Government of India. Lieutenant-Colonel J. G. Jordan, civil surgeon at Monghyr, has been granted six weeks' leave of absence. Lieutenant-Colonel S. Browning-Smith has taken up duty at Lahore as Chief Plague Medical Officer in the Punjab. The services of Lieutenant-Colonel R. Robertson have been placed temporarily at the disposal of H.E. the Commander-in-Chief in India by the Home Department of the Government of India.

Major M. Corry, civil surgeon at Multan, has taken up duty as Officiating Professor of Forensic Medicine and Toxicology at the Government Medical College, Lahore, relieving Major E. S. Peck, granted leave of absence. Major A. E. Walter, superintendent of the X Ray Institute at Dehra Dun, has arrived home on one year's leave of absence from India. Major G. Y. C. Hunter has taken up duty under the Behar and Orissa Administration on transfer from the Bengal Jail Department. Major W. G. Richards has arrived home on leave of absence from Madras. Major C. B. Harrison has been granted six months' extension of his leave of absence on medical certificate. Major C. Bowle-Evans has been appointed to the substantive Medical Charge of the Second Battalion of the 8th Gurkha Rifles, rendered vacant by the appointment of Lieutenant-Colonel P. Hehir as Assistant Director of Medical Services to the Burma Division. Major A. M. Fleming, civil surgeon, Central Provinces, has been granted leave of absence for four months and 28 days for purposes of study in extension of the combined leave already granted.

Captain F. C. Fraser has been appointed to the substantive Medical Charge of the 108th Infantry at Bangalore, vice Major W. H. Cox, D.S.O. Captain J. C. Fraser has returned to India at the expiration of his leave of absence home. Captain K. S. Thakur has been selected for appointment as Specialist in Radiography and Electrical Science. Captain D. S. A. O'Keefe has been granted six weeks' privilege leave of absence. The services of Captain F. P. Mackie, officiating chemical examiner and Government analyst to the United Provinces of Agra and Oudh, have been replaced at the disposal of the Government of India in the Home Department. Captain R. Kelsall has been granted six weeks' privilege leave of absence. Captain C. H. Fielding has been appointed to officiate as Superintendent of the Insein Central Jail in relief of Captain A. S. Leslie, transferred. Captain J. H. Horne has been placed on deputation to Amritsar in connexion with the suppression of malarial fevers. Captain T. C. Rutherfoord has taken up duty as civil surgeon at Bilaspur on termination of his leave of absence. The services of Captain C. A. Godson have been transferred from the Assam Administration to the Bengal Government. Captain S. A. Russak has been granted general leave of absence for one year. Captain E. B. Munro has been selected for appointment to the substantive Medical Charge of the 89th Regiment of Punjabis stationed at Meiktila, Burma, in succession to Lieutenant-Colonel C. J. Sarkies.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Arthur Douglas Cowburn to be Staff-Surgeon (dated Oct. 29th, 1912).

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Henry Brice Parker to be Lieutenant (on probation) (dated Oct. 11th, 1912).

TERRITORIAL FORCE.

Royal Army Medical Corps.

London Mounted Brigade Field Ambulance, Royal Army Medical Corps: Lieutenant Hugh S. Beadles to be Captain (dated Sept. 5th, 1912).

4th London Field Ambulance, Royal Army Medical Corps: Lieutenant William Cowie to be Captain (dated Oct. 7th, 1912).

Attached to Units other than Medical Units.—Lieutenant Kenneth S. Storrs to be Captain (dated Sept. 6th, 1911). Captain William A. Taylor to be Major (dated Oct. 30th, 1912).

DEATHS IN THE SERVICES.

Deputy-Surgeon-General Joseph Christian Corbyn, at Cheltenham, on Oct. 24th, in his eighty-third year. He served for some years in the Bengal medical branch of the Honourable East India Company, and was actively employed during the whole of the Indian Mutiny, being present throughout the siege and final capture of Delhi and the taking of Lucknow, and engaged in the pursuit of Nana Sahib. He served also with the Sikh cavalry, and in consequence of his linguistic ability he was frequently employed on delicate and dangerous outpost work (mentioned in despatches). Surgeon-General Corbyn was the founder of the first female medical school in India.

BRITISH RED CROSS SOCIETY.

In THE LANCET of Oct. 26th, p. 1168, we called attention to Lord Rothschild's important appeal on behalf of the British Red Cross Society in connexion with the sick and wounded in the Balkans. The public response to that appeal has so far been about £13,900, of which some £7500 have been expended in equipping and despatching six units in all in three expeditions to Montenegro, Greece, and Turkey. A further appeal has now been issued for funds to equip and maintain two other units which have been offered. The total expenditure of the society is about £1000 per week. Contributions should be sent to Messrs. Coutts and Co., 440, Strand, W.C.; or the secretary, British Red Cross Society, 9, Victoria-street, London, S.W.

Two units left Victoria Station on Nov. 3rd for Bulgaria, one of which was subscribed for entirely by Sussex people. The units will be met at Belgrade by Surgeon-General Bourke, who will travel with them to Sofia.

Mr. J. Lynn Thomas, C.B., is organising a British Red Cross Society Welsh unit for service in Servia, which it is hoped will be despatched by to-day (Friday).

STAFF TOUR FOR MEDICAL SERVICES IN IRELAND.

A staff tour for practising the Medical Services in the Irish Command was held last week at Glengariff, county Cork. The directing staff consisted of Colonel G. F. Milne, C.B., D.S.O., General Staff, Sixth Division; Colonel M. W. J. Edge, Assistant Director of Supplies and Transport, Irish Command; Colonel R. H. S. Sawyer, A.M.S., Acting Deputy Director of Medical Services, Irish Command; Major C. Dalton, R.A.M.C., Deputy Assistant Director of Medical Services in the Irish Command; Major W. H. F. Weber, Commanding 148th Battery, R.F.A.; Major J. C. Dorgan, R.A.M.C.; Major J. H. Brunskill, R.A.M.C.; and Captain H. L. G. Bell, R.E. The following Royal Army Medical Corps officers took part in the exercises: Colonel H. O. Trevor; Lieutenant-Colonels W. C. Beevor, C.M.G., and N. Manders; Majors C. B. Martin, H. G. Martin, R. L. Popham, F. G. Richards, and W. M. B. Sparkes; and Captains O. L. Harding, C. H. Turner, W. F. H. Vaughan, P. Dwyer, and R. J. Franklin.

Correspondence.

"Audi alteram partem."

ON THE TREATMENT OF PULMONARY TUBERCULOSIS BY THE PROLONGED INHALATION OF ANTISEPTIC AND SEDATIVE VAPOURS.

To the Editor of THE LANCET.

SIR,—I see it announced in THE LANCET that on Tuesday, Nov. 5th, Dr. D. B. Lees will deliver the Bradshaw Lecture at the Royal College of Physicians of London, when the above subject is sure to come under notice.[1] In November, 1909, Dr. Lees narrated, before the Royal Society of Medicine, a series of cases of early pulmonary tuberculosis which he had treated by the continuous inhalation of mingled antiseptic and sedative vapours, with the result that of the 30 cases detailed, 22 were restored to health, while the remaining 8 were signally improved. When Dr. Lees announced these remarkable results[2] it is no wonder he was tempted to exclaim: "The practical extinction of the disease known as pulmonary phthisis is within our grasp."

It might have been expected that the publication of results so startling, obtained by means easy of application, devoid of risk, and within the reach of the humblest sufferer, would

[1] See page 1268.

[2] Royal Society of Medicine, Therapeutical Section, Nov. 2nd, 1909.

have led to the early and extensive trial of a method that had so much to commend it to the attention of practical men. Yet the announcement which Dr. Lees made with such high hopes and which he based on a long series of cases, most of them treated in collaboration with other practitioners, all carefully observed and recorded, not hurried into print, but gradually accumulated in the course of four years' practice before they were submitted to the Royal Society of Medicine, roused so little interest in that learned body that in 12 months no observations, whether favourable or unfavourable to Dr. Lees's claim, had been recorded in its Proceedings. A year later Dr. Lees published in THE LANCET[3] a second series of cases collected during the year that had just elapsed and yielding results very similar to those of the earlier series. On the same occasion the history of those earlier cases was brought up to date, when it was found that the 22 patients reported as having recovered had stood the severest of all tests, the test of time, while several of the remaining eight had since been transferred to the category of the cured.

After commenting on this article, you, Sir, added the practical and significant remark: "It would be interesting to know whether other physicians obtain the same results." This pointed appeal to other physicians to make trials and publish results drew but one solitary reply. Dr. I. Burney Yeo, who had years before done pioneer work in this province, having, indeed, originally devised the simple orinasal apparatus as well as the plan of continuous inhalation of creosote and its allies, of which Dr. Lees is now the champion, gave an account of his experience in former years of the treatment of phthisis by this method, and stated that he had seen remarkable improvement in many of his patients, although he had never obtained the supreme reward—arrest of the disease.[4]

It is difficult to explain this paucity of the testimony to which the Editor opened these columns. But certain it is that whilst the treatment of the victims of phthisis by pneumothorax (among other portents of the day) has found some following, a sane, safe, and simple procedure, tested and advocated by a distinguished practical physician, and intended to arrest the beginnings of the disease, still awaits an adequate trial. It may be that the generous enthusiasm of the advocate, instead of inspiring his brethren with hope, has but moved them to a sceptical smile at the contrast between the simplicity of the means employed and the magnitude of the results obtained. The traditions of pulmonary consumption are, indeed, still so sombre that we are too ready to assume that its arrest is not to be effected by simple measures. Yet the pathologist often comes upon traces of colonies which had thriven for a time, but had ere long become quite extinct, in the lungs of persons whose histories betray no indications of such episodes. Equally strong and still more frequent evidence of an abortive pulmonary tuberculosis is to be drawn from clinical observation, as where a young adult in the apparent plenitude of health is surprised by hæmoptysis, where either the detection of the bacillus or the physical signs establish the diagnosis, yet where recovery follows upon a holiday on the Alps, or under simpler conditions still, such as that if a man's work must be in the city his home shall be in the country. These evidences that the bacillus is often entertained unawares, only to be checked and destroyed without observation, or by purely hygienic measures, may give encouragement to try the simple methods under consideration.

Dr. Lees is aware that so fair an array of successes could not have been obtained unless the disease had been detected and treated in its early stage. And on the momentous question of early diagnosis he has a message to deliver, insisting that we must attain it long before the bacillus can be found, for that definite characteristic physical signs are present for weeks or months before the patient begins to expectorate, and that to suspend the diagnosis until tubercle bacilli are discovered in the sputum is like delaying the diagnosis of cancer until the glands are involved. He maintains that the text-book statements of the earliest physical signs are erroneous in assigning greater importance to auscultation than to percussion, and quite inadequate in the information given as to the regions of the thoracic wall where we may expect to find the earliest changes. Dr. Lees's teaching on the regional distribution of the physical signs forms an application to clinical procedure of the interesting results of Sir James Kingston Fowler's important investigation into the topographical anatomy of pulmonary tuberculosis. This pathologist was the first to show, in his article on the Site and Progress of the Lesions of Phthisis,[5] that the upper and posterior part of the lower lobe of the lung primarily attacked is only second in vulnerability to the apex itself, and that it is usually affected at a very early period of the disease. "The infiltration of the lower lobe at this site in the early stage ..... is one of the most constant features in the pathological anatomy of the disease, and its recognition is a point of the greatest clinical importance, as the existence of a lesion at this spot, coincident with the physical signs at the apex, even though the latter are in themselves of doubtful import, is ..... almost positive proof of the presence of tubercular disease of the lung. It may be of great service in cases where tubercle bacilli are absent from the sputa." Guided by these and other facts of pathological topography, which have not yet found their way into many of the text-books, and of which he sets forth the details in the papers above cited, Dr. Lees points the way to an earlier diagnosis of phthisis. The opinion that in this inquiry percussion is of greater value than auscultation has also been maintained by Skoda, Walshe, and Fowler.

The following case, which made a strong impression on more than one observer, was treated in accordance with Dr. Lees's principles.

A lady of fine physique and in the prime of life began, in the spring of 1909, to be harassed with cough, catarrhal expectoration, and hoarseness. There was no general indisposition. The expansion and resonance of the chest were unimpaired and the temperature was normal. But rhonchi were abundant in the larger and middle tubes, greatly preponderating on the left side; and the tubercle bacillus was found. An eminent laryngologist detected a rough thickening in the interarytenoid space. The months of July and August were passed in the Engadine, where, although the summer was cold and stormy, the cough became mitigated and the expectoration easier, whilst appetite and sleep were excellent. But, forbidden to use her voice, and placed with one companion in the remote station of Maloja, tired of foreign life and fare, she formed, on leaving the Engadine, the unfortunate resolve never to revisit the Alps in quest of health. On her return the bronchial catarrh was found to be less extensive, pulmonary resonance and expansion continued unimpaired, the interarytenoid infiltration was less marked, and the temperature was normal.

The greater part of the winter was passed on the south coast, where bronchial attacks became frequent and where for the first time hæmoptysis occurred. On her return to London in the spring the left upper lobe was found to be the seat of massive consolidation, with close and fine bubbling, and indications of small cavities. The right lung remained as resonant as before, with but little rhonchus. The cough was distressing, the voice hoarse, there were night perspirations, and hæmoptysis soon recurred. Tubercular infiltration was now found in both aryepiglottic folds and in the epiglottis. At this juncture, when this fine frame seemed to be within measurable distance of becoming a total wreck, Dr. Lees's plan of prolonged inhalation was adopted, the inhaler being charged with creasote and menthol. The prompt relief afforded and the successive salutary changes that took place in the physical signs shall now be recorded, and will embody the observations of the eminent authority who shared in the management of the case.

The patient's own report was that the inhalation "miraculously stopped cough, expectoration, and sickness." In two months' time the left upper lobe was found to be quiescent and the rhonchi much less extensively moist. The larynx was greatly improved, the voice was almost clear, and the patient declared herself to be "fit." By the end of four months the left lung had become resonant in the main, with bronchial breathing in places, and some rhonchus. The patient seemed marvellously well. At the end of six months, but for one's knowledge of the condition of the chest when the inhalation was begun, there would have been the greatest possible difficulty in diagnosing tuberculosis, the physical signs over the left lung being almost too like the signs over the right lung for one to distinguish the affected parts. The larynx was pronounced to be normal.

In the second winter some months were again spent on the

[3] Nov. 19th, 1910.
[4] THE LANCET, Jan. 17th, 1911.
[5] Fowler and Godlee: Diseases of the Lungs, p. 350.

south coast, where there was a disposition to attacks of bronchial catarrh and to fatiguing fits of wheezing rhonchus. After leaving the south coast the tendency to chills ceased, and although the noisy wheezing attacks continued the patient felt perfectly well, and during a summer holiday in North Wales could bathe in the sea every morning and walk 12 miles or more with ease.

Such a result, although not perfect, is wonderfully good. And it is to be noted that whereas Dr. Lees postulates that his method be applied in the early stages, in the case just narrated the disease was advanced and advancing. So that if the argument *a fortiori* be ever applicable, it may be fittingly employed here, where some slight and apparently inert organic damage is all that remains to testify to the severity of the past invasion of the lung. The course of the illness would doubtless have proved less eventful and its issue even more perfect had the patient, still fairly vigorous, instead of lingering on the south coast, passed the first winter in some lofty and sheltered Alpine valley and shared in the Alpine pastimes. But simple measures and home life, a conjunction not brought about until the disease was far on its way, have here been followed by results that might still be claimed as admirable had they ensued upon a winter spent among the wonder-working heights of Switzerland.

I am, Sir, yours faithfully,

Queensborough-terrace, W., Nov. 2nd, 1912. S. N. BRUCE.

THE USE OF ANÆSTHETICS IN EXPERIMENTS ON ANIMALS.

To the Editor of THE LANCET.

SIR,—I find that a passage in the Report of the Royal Commission on Vivisection has conveyed the impression that I regard the frequent use of anæsthetics as unnecessary in experiments on animals. I wish to state in the most unqualified manner that I regard the use of anæsthetics as right and necessary in every case where appreciable pain would otherwise be inflicted, except in the cases (provided for in existing legislation) where the object of the experiments is of sufficient importance and would not be attained if anæsthetics were used, or where, if the animal were allowed to recover, the after-effects of the anæsthetic would cause more pain or discomfort than the operation. I also wish to state that in any experiments I may do I comply strictly with the existing law, although, as I stated in my evidence before the Commission, it in some respects defeats its own objects and causes much unnecessary trouble to those engaged in the advancement of medical knowledge.

I am, Sir, yours faithfully,

London, Nov. 4th, 1912. M. S. PEMBREY.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—With reference to the appointment of the district medical officer of health as a part-time assistant tuberculosis officer, it was none too soon for the council of the Society of Medical Officers of Health (on the motion of a district medical officer of health) to pass a resolution to the effect that the position and responsibility of the district medical officer of health should be fully recognised in any tuberculosis scheme. I shall leave it to others to advocate the claims of the *part-time* district medical officer of health, and shall for the most part confine myself to the case of the *whole-time* district medical officer of health—for example, one who is medical officer of health for a combination of districts, and perhaps a school medical inspector as well, and one who has some time to devote to additional work.

In large areas the chief tuberculosis officer will probably require the assistance of one or more assistant tuberculosis officers to take his place occasionally at the hospital, institute, dispensary, or visiting station, or even to call at the patient's home in consultation with the patient's doctor. One or more *whole-time* assistants could, of course, be appointed. Considerations of economy may, however, point to the appointment of local men. In that case who should be more able to render such assistance than the average whole-time district medical officer of health? Take the tuberculosis dispensary as an example. What, according to the model scheme of the British Medical Association, should the work of the dispensary consist of? Diagnostic, consultative, bacteriological, and statistical work, with perhaps certain special forms of treatment (e.g., by tuberculin) approved of by the patient's doctor. Working as he would be under the supervision of the chief tuberculosis officer, would not the average whole-time district medical officer of health be capable of doing such work? As regards diagnostic and consultative work, he has had the usual clinical training in a general hospital, he has had further clinical training in a fever hospital, and, in fact, is often called in consultation in fever cases. He has also had in most cases experience of private practice, and if a school medical inspector as well he gets experience in diagnosing disease in scores of school children every week. Dr. R. A. Lyster, in his exhaustive tuberculosis scheme for Hampshire, has in mind apparently the utilisation of assistant school medical officers for this work.

Even apart from previous special training in tuberculosis work the opinion of the assistant medical officer of health would still be useful to the general practitioner, for two heads are better than one, and further, by frequent contact with his chief and this special kind of cases, he would soon become by no means a mean substitute. As for bacteriological ability, of course, his diploma would be sufficient guarantee for that, and with regard to statistical work, his previous experience as a health officer would eminently qualify him.

It seems to me that several advantages would attach to the district medical officer of health being also assistant tuberculosis officer. As against appointing a practitioner to such an office, it would be but natural for the bulk of practitioners in a locality to prefer consulting (in the absence of the chief officer) with the medical officer of health rather than with a rival practitioner, who would thus be in a manner enhancing his own prestige at their expense. The medical officer of health would also have a chat with the patient about housing matters, which might lead to administrative action. He would also enjoin precautions in the interest of the public health. One great advantage a whole-time medical officer of health would have over a general practitioner would be that he could arrange to attend the dispensary at a fixed hour or make an appointment and keep it without having to leave a patient or run the risk of being some distance from home when an urgent call came. Again, while all cases of pulmonary tuberculosis are expected to be notified to the district medical officer of health, the latter, as far as the Government orders already made are concerned, is expressly forbidden to publish the patient's name and address. In fact, there are responsible persons who advise the district medical officer of health to comply strictly with Article VII.(a) of the Public Health (Tuberculosis) Regulations, 1911, which provides solely for the inspection of registers by certain persons and does not require a medical officer of health to give any information in writing. Further, it has been stated that in the event of a patient incurring pecuniary loss through leakage of information, the medical officer of health might be held liable to damages. A medical officer of health, however, whose active interest had been enlisted in the campaign against tuberculosis could be trusted to make the utmost legitimate use, tempered by due discretion, of the information in his possession. This would lead to the discovery of "contacts," as would also action following upon the death of a person from tuberculosis, such deaths being, of course, immediately notified to the medical officer of health by the registrar.

As a conference of representatives of the British Medical Association with representatives of the Society of Medical Officers of Health is to take place on Nov. 12th, I trust that some such considerations as the above will receive adequate attention. Another matter that might well be pressed forward by the latter society is that on the Local Medical Committees to be formed the district medical officer of health should have adequate representation, and also the British Medical Association might be urged to exert their influence to secure a due representation of the district medical officer of health on the County Insurance Committees, so that he might not be present in a subordinate position and to give information only, but be on equal terms with the other members of the committee. In Wales, at least, the district councils, being the original, and until lately the only, sanitary authorities, are moving to get direct representation on the County Insurance Committees.

What is the basis of the anticonsumption crusade but the fact that tuberculosis is an infectious disease, and in whose province has the control of infectious diseases been regarded

as being hitherto? What are sanatoriums and consumptive hospitals but other terms for isolation and fever hospitals for a special but chronic kind of fever? Why, therefore, should the district council and the district medical officer of health be granted such an insignificant share in the various tuberculosis schemes, and even in the model scheme of the British Medical Association?—I am, Sir, yours faithfully,

Criccieth, Nov. 6th, 1912. E. LLOYD OWEN, M.D., D.P.H.

To the Editor of THE LANCET.

SIR,—I trust that you will find room to publish the following statement showing the relation of the Government proposals for a medical service to the demands of the British Medical Association. It shows the present position, which the laity are very confused about.

Copies of the statement for distribution to the medical profession and laity are obtainable before Nov. 16th at 10*s.* per 1000. I am, Sir, yours faithfully,

Brighton, Oct. 30th, 1912. E. ROWLAND FOTHERGILL, M.B.

[STATEMENT.]

—	Original proposal.	Present proposal.	B.M.A.' demands.
Tuberculosis medical service[1]—			
Domiciliary attendance			2*s.* 6*d.* per visit.
Domiciliary attendance with vaccine treatment		6*d.* per insured person on list.	2*s.* 6*d.* extra.
Night visits; special visits; consultations; mileage; certificates; reports (quarterly and special); attendance at dispensary			Special fees.
Administration of medical benefits		[2]	—
Drugs, serums, vaccines, and appliances		1*s.* 6*d.* to 2*s.* per insured person.[5]	Per tariff.
Medical attendance, ordinary—			8*s.* 6*d.* per insured person. Income up to £104.
Sound lives	... ...	... ...	
Senile and disabled members in December, 1911, of approved societies			
Unsound lives			"
Diseases due to misconduct ...	6*s.* per insured person. Income up to £160.		Fee per visit.
Workmen's Compensation and other Acts			"
Temporary residents			"
Extras,[3] as—			"
Mileage; attendance on miscarriage; anæsthetics; night visits; special visits; dental extractions; dislocations and fractures; consultations; illnesses due to confinement; serum, vaccine, &c., treatment; minor operations; eye testing; treatment of tuberculosis[3]; accidents; special examinations, &c.		6*s.* 6*d.* per insured person. Income up to £160.	Extra fees (equal to 2*s.* 6*d.* per insured person).[6]
Medical certificates—			
For use of Insurance Committees			Free.
For use of approved societies ...			Extra fees.
"Use of modern means of exact diagnosis"			"
Supervision of practice[4]			—
Bookkeeping (record of visits, consultations, diagnoses, with indication of kind of attention given)			—
Reports on patients and their surroundings (special and general, based on information recorded in day book			Extra fees.

[1] For (1) treatment of anyone (no income limit) in sanatoria, dispensaries, and other institutions; (2) domiciliary treatment for insured persons and dependants only. It is illegal at present to give domiciliary treatment to non-insured persons. [2] Major operations and services of specialists are considered not to be included in the Act. [3] When not provided with treatment under the Tuberculosis Medical Service. [4] Criticism of prescriptions, reports, certificates, &c. [5] To cover cost of dispensing by doctors (in emergency and in rural areas) and by chemists. A Central Fund to meet epidemics. [6] B.M.A. estimate.

To the Editor of THE LANCET.

SIR,—As a country doctor I wish to contradict most emphatically Dr. G. S. Keeling's statement *re* mileage. "There is to be no mileage fee, and I fail to see that this should be insisted upon." There *is* to be a mileage fee (over three miles), and we must insist upon its being a substantial one, even though it should encroach upon the 7*s.* of the town doctor. If three provisional medical committees of rural Norfolk have decided against a mileage fee, they must be suffering from temporary insanity. As an act of charity I have for many years attended poor people living over three miles from my home for the ridiculously low sum of 5*s.* a year, but as an act of business I refuse to attend these people for the same fee that is to be paid to the urban doctor.

Dispensing has nothing to do with mileage, and the money paid for it cannot be regarded as a "set-off." In the country it is a necessity, so it is absurd to talk of it as a privilege. Some like it; many dislike it, but it is undoubtedly good for our patients.

I am, Sir, yours faithfully,

T. CUMING ASKIN, M.D. Dub.,
Member, Provisional Medical Committee, South Suffolk Division.

Alderton, Woodbridge, Suffolk, Nov. 4th, 1912.

To the Editor of THE LANCET.

SIR,—The pamphlet, with the title "The Government's offer to the Medical Profession," which has been widely circulated to the profession, must be regarded as of special significance, both as coming from the Advisory Committee in connexion with the Insurance Act, and also as being marked "Urgent." Although the signatories, at the head of whom is the Regius Professor of Medicine at Cambridge, state that they do not "presume to give advice," the practical gist of the pamphlet is (1) to warn the profession that unless it consents to work the Act on the terms now offered the only alternative is the establishment of a State Service; and (2) to appeal to the profession, on the grounds of pecuniary considerations, to consent to work the Act for three years at least.

It must not be doubted that the Government and the profession will consider this important question not only from the standpoint of cost and remuneration, but also from that of efficiency of benefit to the recipients of whatever kind of medical service may be instituted. The medical profession is fully aware that contract practice, unless very carefully conditioned and well remunerated, must necessarily tend to encourage the treatment of patients by drugs alone rather than by such advice, whether inclusive or not of drug treatment, as can only be given efficiently after a considerable expenditure of time, skill, and care in diagnosis. Sir Clifford Allbutt himself has duly emphasised the error of regarding medical treatment as synonymous with drug-giving; and the opposition to the medical part of the Insurance Act has in many quarters been largely, or even wholly, based on the conviction that the Act will extend enormously the domain of contract practice. As far as can be seen, the present offer of the Government is not likely to diminish in any way the acknowledged evils which must always attach more or less to contract practice; and it is to be noted that this very important consideration is virtually ignored in the Advisory Committee's pamphlet. As against the alternative of a State Medical Service which would be practically free from this great objection, the Committee appeal only to what they take to be the pecuniary interests of the profession when they ask it the final question whether it would be "wise" to refuse to work the Act.

It may be gravely doubted whether even the pecuniary interests of the profession would be better served by working the Act as now proposed than by the establishment of an efficient and adequately paid State service. Apart from this consideration it would certainly appear from all points of view that the true interests of both doctors and patients would be better served by the alternative plan which is threatened rather than fairly set forth by the Advisory Committee. It seems to many that at the inception of the medical insurance scheme, and for some time after, no distinction was emphasised or suggested between the merely routine treatment of patients by pills and potions, and the true and scientific treatment by careful diagnosis and consequently appropriate advice. Since then, according to Sir Clifford Allbutt, the ideals of the profession have been raised or (shall we suggest as an amendment?) have been publicly recognised. Surely, therefore, one all-important question for consideration at this juncture is whether the higher ideal of efficient work will be better attained by an immense

increase of contract practice than by a well-directed system of State Medical Service.

There would, indeed, be some risk were the Committee's "urgent" hint to be accepted in a hurry, and a three years' trial of "working the Act" accorded, that the profession, apprehensive of further experiments, might lose hold of its higher ideal and stolidly continue its work, however keenly it might realise its defects.—I am, Sir, yours faithfully,

Nov. 2nd, 1912. X.

To the Editor of THE LANCET.

SIR,—I think the profession is greatly indebted to Sir Clifford Allbutt and his colleagues for the able way in which they stuck to their guns in the arrangements with the Chancellor. The terms offered by the latter are, in my judgment, satisfactory, and the profession will do well in accepting them.

I am a country practitioner and I intend to join all those of my professional brethren who are prepared to give the Act a trial on the terms offered. Every man to whom I speak thinks the terms such as we can accept. I have held club appointments, and know these terms are better than we have had. I am, Sir, yours faithfully,

Nov. 2nd, 1912. A COUNTRY DOCTOR.

To the Editor of THE LANCET.

SIR,—I quite agree with "Country Surgeon" that the prohibition to supply medicines to our patients under the Insurance Act will seriously affect the incomes of many practitioners. We have not sufficiently protested against the innuendo that we cannot be trusted to supply proper medicines. If the Chancellor of the Exchequer cannot trust "even the legal profession" under circumstances of temptation, why should he pin his faith in chemists? We ought really to combine whole-heartedly and insist upon having the irreducible minimum of 10*s.* per head, to include medicines, and thus conserve our right to dispense.

I am, Sir, yours faithfully,

Oct. 29th, 1912. CITY SURGEON.

To the Editor of THE LANCET.

SIR,—I enclose you a report of a meeting held at Wigan, and should be glad if you could find room for it in your next issue. I am, Sir, yours faithfully,

Nov. 4th, 1912. SECRETARY.

[ENCLOSURE.]

At a large and representative meeting of Lancashire colliery surgeons held at Wigan on Friday, Nov. 1st, Mr. W. Mitchell Roocroft presided. The following resolution was passed by 43 votes to 2: "That accidents and industrial diseases under the Workmen's Compensation Act, 1906, shall not be entitled to medical benefit under the National Insurance Act, 1911." Dr. Thomas Campbell was appointed a delegate to attend a conference at Newcastle-on-Tyne on Nov. 6th.

WAR AND DISEASE IN THE NEAR EAST.

(FROM THE BRITISH DELEGATE TO THE CONSTANTINOPLE BOARD OF HEALTH.)

THE event so long dreaded by all the world has come at last, and war is raging on all the land frontiers of European Turkey. A Balkan war in the winter months must involve, even under ordinary circumstances, an incalculable amount of bitter suffering on both sides. But this war is no ordinary war. One combatant is fighting, with his back to the wall, against four enemies at once—fighting, as he knows, for his very existence on the European continent. On both sides is a racial hatred long pent-up and at last finding vent in a struggle which both welcome as a means of settling, once and for all, the conflict of centuries. But when to that racial hatred is added, like oil on a blazing fire, the bitter and undying animosity of rival religious creeds—then, indeed, the outlook is black. This is not the place to discuss such grave questions as the responsility for thus adding fuel to the flames, but it is not easy, in writing on the subject at all, to pass over in silence the humiliating fact—humiliating to Western civilisation, humiliating to Christianity—that the first, indeed the only, appeal to religious fanaticism has come from the principal of the allied Christian States; while the Moslem leader, in a dignified exhortation to his troops, expressly urges them to respect the religious susceptibilities of those who differ from them in creed.

There can be no doubt that the resulting mortality will be enormous, and that it will be caused as much by disease as by the bullets and cannon-shot of the enemy. The arrangements on both sides for dealing with the sick and wounded are, it would appear, exceedingly inadequate, and all the help that Red Cross or Red Crescent can give will be needed, and more than needed. Both organisations are already doing admirable work, and it may be hoped that their appeals for support in the British press will meet with an immediate and substantial response. And there will be no less need for help to the non-combatants, whose sufferings from the war will be almost as great as those of the soldier in the field. Penniless refugees are already pouring into Constantinople, and the ravages of semi-starvation, penury, and disease are only too certain to decimate them, as they did in analogous circumstances during the Russo-Turkish war of 1877–78. Typhus fever and small-pox were the principal diseases that then raged among these poor people, and it is only too much to be feared that they will do the same now. A British "War Relief Committee" has already been formed here on the initiative of Lady Lowther, wife of H.M. Ambassador in Constantinople, and is organising a scheme of distributing bread, fuel, and clothing to the families of soldiers and to refugees.[1]

Should cholera be added to the list of disease to which troops in a big war are invariably liable, the horrors of this war will be enormously increased. That there is serious danger of this occurring it is, unfortunately, impossible to deny. The degree of danger is best estimated by a survey of the actual cholera situation in the Turkish Empire and in adjoining countries. Such a survey has been continuously given in the columns of THE LANCET in my previous letters, and it is only necessary to add the records for the past few weeks since the date of my last letter (published in THE LANCET of Sept. 28th, p. 912). The most encouraging features in the situation are that this year, for the first time for many years past, cholera seems to be absent from the Russian Empire; that the few cases of the disease already recorded as occurring in Hungary have been followed by no others; and that in Turkey itself cholera is so far confined to Asiatic territory. On the other hand, large numbers of *redifs* (reservists) are now being called up from the Asiatic provinces, and it is much to be feared that they may bring the germs of the disease with them, and there has been unfortunately a fresh importation of cholera to the Hedjaz from its endemic sources in India and the Dutch Indies. The returning pilgrimage of this year will be a cause of more than usual anxiety. The Kurban Bairam fêtes at Mecca will fall this year about Nov. 18th–21st, and after the latter date the return flow of pilgrims will set in, and the existing defences against the spread of disease by their means will be put to a severe test.

Cholera in Asia Minor and Syria.

After repeated endeavours to obtain the issue of regular weekly bulletins from the responsible authority (the Administration de Médecine Civile et d'Hygiène Publique de l'Empire) something like success has been attained. The following are the figures of the last five bulletins that have been published for the whole Turkish Empire:—

From Aug. 31st	to	Sept. 7th	...	...	127	cases,	132	deaths.
,, Sept. 8th	,,	,, 15th	...	...	109	,,	91	,,
,, ,, 16th	,,	,, 22nd	...	...	58	,,	72	,,
,, ,, 23rd	,,	,, 30th	...	...	108	,,	119	,,
,, Oct. 1st	,,	Oct. 9th (*sic*)	...		66	,,	101	,,
,, ,, 10th	,,	,, 16th	...	...	33	,,	89	,,

These figures are, however, almost certainly much below the truth. The disease has been most active in the vilayets of Syria and Aleppo, but it has been more or less prevalent in those of Adana, Konia, Sivas, Angora, Bitlis, Ma'amouret-ul-Aziz and Diarbekir. A glance at the map will show that these vilayets are situated in the centre and south of Asia Minor. The northern and western shores of the great peninsula are fortunately so far free from the disease, and so also are the valley of the Tigris below Diarbekir and that of the Euphrates below Biredjik (to the north-east of

[1] An eloquent appeal on its behalf has appeared in the British press, and we venture to urge all who read these words and who can spare even a trifle for this admirable work, to send a subscription to "Lady Lowther's War Relief Fund," National Bank of Turkey, 50, Cornhill, E.C.

Aleppo). In Damascus the epidemic is fortunately declining, as shown by the following official figures:—

From July	18th	to Sept.	12th	...	...	159	cases,	134 deaths.
,, Sept.	13th	,,	20th	...	...	74	,,	53 ,,
,, ,,	21st	,,	29th	...	...	64	,,	45 ,,
,, ,,	30th	,, Oct.	4th	...	...	30	,,	28 ,,
,, Oct.	5th	,,	13th	...	...	12	,,	8 ,,
,, ,,	14th	,,	20th	...	...	2	,,	4 ,,

Cholera in the Pilgrimage.

As pointed out in my last letter, the Hedjaz has been threatened this year with two quite distinct strains of cholera. That from the north (from Damascus and other places in Syria) is the remains of an epidemic that has prevailed for several years in Europe, and was already showing signs of greatly diminished virulence and power of spread. That from the south and east, on the other hand, was a fresh strain, newly imported from the homes of the disease in the Far East.

The former has so far extended no further south of Damascus than a place called Busroulharir, described as a dependence of Ezea. Neither place is marked on the best maps, but the first cases here were reported by the governor of Dera'a, the junction on the Hedjaz railway, 24 hours south of Damascus, where the Caiffa-Dera'a branch joins the main line, and Busroulharir is presumably in that neighbourhood. The disease was first reported from here on Sept. 29th; on Oct. 1st it was stated that 30 cases with 9 deaths had occurred before that date, and one or two more have been reported since, as also a few cases at Dobra, near to Busroulharir. Mention has also to be made of two cases of cholera which occurred before Sept. 10th at Emebli, a village one hour from Fouli, a station on the Caiffa-Dera'a line. No cases appear to have occurred there since.

The fear expressed in my last was only too soon realised, and Mecca and Medina are already seriously infected with a fresh strain of cholera imported from India and the Far East. In addition to the four steamers mentioned in that letter three others arrived recently at Camaran, and in each instance a case of cholera developed among the pilgrims during their stay in the lazaret. They were the s.s. *Menado*, which arrived at Camaran from the Dutch Indies on August 28th, the s.s. *Khosref*, and the s.s. *Islami*, both of which arrived from Bombay early in September. The exact date of the first case of cholera in Mecca is not known, but the disease was present there on Sept. 23rd. By Sept. 26th 8 cases had been seen; they occurred among pilgrims from Bokhara and the Yemen, and the disease spread to Javanese pilgrims and to troops of the garrison. The cable to the Hedjaz is constantly interrupted, and telegrams have arrived most irregularly; they indicate that down to Oct. 19th only from 1 to 3 cases had been seen daily, and from 1 to 7 deaths (most of the cases seem to have been discovered only after death). From Mecca the infection soon spread to Medina; for at this time there is a steady flow of pilgrims from Mecca to the latter town, whence they will again return to Mecca in time for the Kurban Bairam fêtes. The first cases in Medina were seen on Oct. 4th in a caravan of about 4000 pilgrims, who had arrived from Mecca on that and the preceding days. Since then the following figures have been reported: Oct. 4th, 7 cases, 4 deaths; Oct. 5th, 35 cases, 32 deaths; Oct. 6th, 29 deaths; Oct. 7th, 26 deaths; Oct. 10th, 4 deaths; Oct. 11th, 5 deaths. It is a matter for congratulation that the figures are not still higher; but the really dangerous period will come when the fêtes of Bairam approach, and when Mecca, Arafat, and Mina will be thronged with 100,000 pilgrims living under the usual insanitary conditions.

Cholera and Plague in Persia.

Telegraphic reports from Bushire and Tehran state that 3 cases of cholera occurred at Ahwaz in the week ending Oct. 5th, and 3 cases of the same disease at Nasseri before Oct. 15th. Ahwaz is situated on the Karun river, which joins the Shatt-ul-Arab at Mohammerah, and Nasseri is described as near the latter town. No reports have been received of cholera in other parts of Persia on the Gulf, and it remains to be seen what the origin of these local outbreaks can have been. On Oct. 9th a telegram was received from Tehran stating that a mortal disease, commencing with rigors and ending with hæmatemesis, had already caused some 50 deaths at Turbet-djami, in the Persian province of Khorassan (in the north-east of Persia). A second telegram, dated Oct. 21st, states that this epidemic has been "clinically diagnosed by Dr. Sorotin as pulmonary plague." Further reports on this outbreak will be awaited with interest.

Plague in the Kirghiz Steppes.

The following information has been recently officially published. On July 4th (17th) plague appeared in a farm, situated 10 versts from the village of Zavetnoye; the patient, a boy, was transferred to the village, where other cases followed. In all, between July 4th (17th) and Sept. 5th (18th) 35 cases and 25 deaths occurred in this village, which is situated in the Tchernoyarsk district of the Astrakhan government. On July 29th (August 11th) plague appeared at the Romanenko farm, 85 versts to the north-east of the village of Rakhinka, in the Tsaref district of the same government; it spread to the village, and between the date named and Sept. 15th (28th) 18 cases and 14 deaths occurred here and in an adjoining farm at Rodionova. In the Kirghiz steppes of the Astrakhan government, between August 13th (26th) and Sept. 1st (14th), 6 cases of plague with 4 deaths were reported. In the whole government of Astrakhan the totals are officially put at 57 cases and 41 deaths between July 4th (17th) and Sept. 9th (22nd). In the Djambeitinsk district of the Uralsk government 4 cases of plague with 4 deaths were recorded between August 25th (Sept. 7th) and Sept. 13th (26th).

Plague in Morocco.

On Sept. 18th the French Government officially notified that one case of bubonic plague had occurred at Casablanca, in Morocco. Several suspected cases had, it was added, also been seen, but the bacteriological reports had not confirmed them. On Sept. 29th 10 certain cases of plague and 2 suspected ones were reported from the same port. Five of the cases had, it was added, occurred in Europeans. No further news has since been received.

Constantinople, Oct. 28th.

THE MOTOR EXHIBITION AT OLYMPIA.

(FROM A SPECIAL CORRESPONDENT.)

THE eleventh International Motor Exhibition at Olympia opens to-day (Friday) and closes on Nov. 16th. Press day afforded the opportunity thoroughly to inspect the majority of exhibits without the discomfort which is inevitable when the public are admitted. Other exhibits were seen at the manufacturers. It is not very profitable to attempt to detail the leading features of the large number of cars which are exhibited, but it may be useful to recite the various points to be considered by would-be purchasers. Of course, the majority of cars are now so well built that a doctor's choice becomes somewhat difficult. All manufacturers seem to be catering for the man of moderate means, to which class the medical practitioner usually belongs.

We all wish for a car which will require to visit the motor hospital as seldom as possible, and which will also take us to our destinations without unexpected halts. Therefore, in making a selection, an important point is the manufacturer's reputation. Even an expert by mere inspection cannot gauge the quality of the material of a car's vitals, and thus the standing of the maker must be taken as some sort of guarantee. With suitable steel a crank-shaft or back-axle may be much lighter than one made of metal of an inferior quality, and therefore mere size and weight of these parts do not constitute a criterion.

A great many of the minor repairs and adjustments the owner will probably do himself, and consequently the question of accessibility must be taken into account. It is all very well for makers to say that they fit covers over the valve tappets. I grant these are good features, but I would rather be without them than have such protection from dust, &c., removeable only by taking down the exhaust pipes, or perhaps the carburettor or magneto. True, valves seldom give trouble, but still a stem may break or a valve tappet may need adjustment, and the dismantling of half the engine to do so is neither desirable nor necessary. However, many exhibits show considerable improvement as to accessibility.

Carburettors are much improved, and nearly all cars have excellent ones, such as the Zenith, White and Poppe, and the

Claudel-Hobson, but they are not all in ideal situations. If a carburettor is so near the shield that to take the jet out the carburettor must be taken down, the owner may be the reverse of pleased if he has to perform this operation on the road. Therefore it is essential that a carburettor should have a jet which can be removed *in situ*, and with rapidity. I should also insist on an easily reached and cleaned filter, which should be interposed somewhere between the carburettor and the petrol tank. As to thermo-syphon cooling or water circulation by pump, there is little to choose. Pumps are now so well made that they give very little trouble, and possibly pump circulation has advantages, though thermo-syphon cooling is increasing in favour. Most radiators are now of a good type, and the form fitted need not be regarded from the point of efficiency, though some have advantages in their appearance. Engines, now we have the oxygen carbon removing process, do not need dismantling for cleaning. Thus the one argument against the mono-bloc casting has disappeared, and it is certainly popular with many four cylinders. I do not favour some of the American patterns of detachable engine heads. It is true they permit of easy cleaning, but then the water-joints that have to be remade nullify absolutely that small and even questionable advantage.

Thorough lubrication means long life for the engine, and it is sparing of trouble to have some mechanical automatic means of ensuring a constant supply of oil to the engine bearings and pistons. It must also be remembered that the same oil will not perform the same function for ever; that the used oil must be cleared out of the crankcase at times. Though it is a small point, we all want as little work to do as possible. It is a trouble to unscrew a plug situated beneath the crankcase; therefore a cock fitted there may ensure a more frequent removal of exhausted and grit-fouled lubricant. As to transmission, both bevel-wheel and worm drive are good, but it must be borne in mind that a worm is more expensive to make and must be made well; so on cheap cars without a reputation I think I should vote for the bevel. Certainly a feature is the introduction of silent chains instead of gearing for the distribution mechanism; but as these parts have seldom given much trouble, it is questionable whether this innovation can be regarded as a desirable one. Chains were introduced for the operation of sleeve valves, but whether they are useful for the distribution gears is questionable. Therefore I am somewhat astonished at the large number of manufacturers now employing this method.

For those who intend to do their own repairs and are not anxious for much experience in that direction, I think the cone leather-faced clutch has advantages. Anyone can rivet on a fresh bit of leather, but generally the makers only can repair a multiple disc type clutch. Therefore one welcomes the fact that the cone type still holds its own. The brakes are very important, and the internal expanding and the external band types are both equally good provided that the adjustment is easy. Whichever brake is fitted should be worked by rods, not wires; and if both sets of brakes, as on some cars, can each operate on the back wheels direct, and not through the cardan shaft, it is an advantage. The question of detachable wheels is worth considering, but with the ever-popular Stepney I question if they are worth the extra cost to the man of moderate means.

The majority of tyres are good, but it must be remembered that a little extra spent on the initial outlay in providing a somewhat larger size is fully repaid by the longer wear obtained. Steel-studded non-skids are more expensive, but the worry of a skid may be economically avoided by using plain tyres and carrying Parsons' non-skid chains, which are easily fitted, and can be put on rapidly when the road condition indicates their use.

One feature which is indicative of the whole tendency of the automobile industry is well marked—that is, the successful attempt to blend, as it were, the carriage work with the chassis. No longer has one the impression that the body has been built regardless of its future destination. On the contrary, the dash not infrequently sweeps upwards and outwards, its swelling panels merging harmoniously into the *carrosserie*. The bonnet, too, blends with the dash, and the graceful contour throughout the body, with its gentle curves and rounded corners, forms a most effective whole. Still, it is as well to recollect that the coach, though the most noticeable feature, is not the most important. Accessibility may perhaps be named as the most distinctive mark of the majority of exhibits. The carburettor, the magneto, the gear-box, and the brakes are now in most cases all so disposed that they are readily to be got at for adjustment or removal. In a large number of cars self-starters are to be found—a useful feature in a doctor's car. Automatic functioning of the carburettor and magneto has now become universal. The magneto is so improved that one is not so disposed to condemn the practical disappearance of the dual system of ignition. On the whole, a moderate bore-stoke ratio predominates, though on some engines the excessively long stroke persists. Four forward speeds are increasingly common, and gear-boxes are now invariably oil retaining. Pressed steel frames are much in vogue, and silence characterises the majority of the new models.

Among the exhibits of cars which may be inspected with interest by the medical man may be mentioned the Armstrong-Whitworth, the Austin, the Clement, the Darracq, the De Dion Bouton, the Adler, the Daimler, the Sunbeam, the Talbot, the Wolseley, the Napier, the Rover, the Renault, the Belsize, the Star, the Humber, the Gregoire, the Briton, the Vauxhall, and the Swift—all of which show cars within the means of most practitioners.

The number of accessories in the exhibition is legion, and many of them are better termed luxuries than accessories. A stand that should certainly be visited is that of the Bosch Magneto Company, as the majority of cars have this method of ignition fitted. On this stand the principle of their highly successful method is demonstrated, and car owners will greatly benefit by seeing how to keep their magnetos adjusted. The Simms' Magneto Company have also on show a fascinating exhibit. Lamps are, of course, a necessity, and on Messrs. Brown Brothers' stand are excellent examples of acetylene and also of electric lamps. Their autoclipse head-lights will interest all who have to travel by night. On this stand, too, is shown the Brolt car lighting dynamo set, which for simplicity and efficiency has but few equals. Messrs. Peto and Radford, C. A. Vandervell, Bleriot, and Polkey-Jarrott also show ideal electric lamps.

Among the many forms of shock absorbers may be mentioned the Gabriel rebound snubber, which has been described already in THE LANCET, and the U.M.I. suspension compensators, and the Parsons' shock absorbers—all good methods of ensuring easy riding. Messrs. Brown Brothers also show a neat shock absorber which is known as the Brew-ree. For those who like speedometers, which are certainly of use, I should advise a visit to the stands of the Cooper Stewart Engineering Co. and Messrs. Markt and Co. On Messrs. H. M. Hobson's stand, in addition to the Claudel-Hobson carburettor, are samples of their very reliable sparking plugs. A stand that certainly should be visited is that of the Harvey Frost vulcanisers, where demonstration will be given of their successful methods of repairing tubes and covers. Their baby vulcaniser, which is sold for £3, is competent to thoroughly repair an outer cover as well as a tube.

I have only attempted to summarise for the use of medical practitioners the outstanding features of the exhibition, while giving hints that may be of practical use to purchasers.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Health of the City.

IN his report on the health of Birmingham for the third quarter of the year the medical officer of health gives the estimated population as 850,947. The birth-rate was 26·2 per 1000 and the death-rate 10·9 per 1000. This death-rate has only been equalled once—namely, in 1910. The infant mortality was unusually low, only 91 per 1000 as compared with 238 in the same quarter last year. The deaths from the principal infectious diseases were as follows: enteric fever, 3; measles, 81; scarlet fever, 41; whooping-cough, 26; diphtheria, 23; pulmonary tuberculosis, 222. 1477 cases of scarlet fever were notified during the quarter, 984 cases of pulmonary tuberculosis, 173 of diphtheria, 158 of erysipelas,

20 of puerperal fever, 11 of enteric fever, 6 of poliomyelitis, and 4 of cerebro-spinal meningitis.

Midland Medical Society.

The address at the inaugural meeting of the Midland Medical Society held on Oct. 31st was given by Dr. Charles Mercier. His topic was "Drunkenness and the Physiological Effect of Alcohol." Mr. Christopher Martin presided, and many medical men from all over the Midlands attended. Dr. Mercier's address was marked by his usual force and lucidity, and was enlivened throughout with witty phrases and humorous applications, which convulsed his audience. Without ignoring in the least the evil effects of alcohol, he contended with great emphasis that England to-day was a sober nation, and that the anti-alcohol agitators were intemperate in language and blind to facts. He pointed out that the proper scientific attitude towards the disease of alcoholism was not one of mere denunciation but of patient inquiry into causes. The task they should set themselves, if they wished to diminish the small remnant of drunkards that still remained amongst them, was not to cry "Bogey!" nor yet to bid the drunkards observe how vastly superior to the rest of mankind were the people who did not take beer with their meals, but to search out the reasons for drinking.

Birmingham Medical Mission.

The annual meeting of this charity was held on Oct. 31st, the rector of Birmingham (Canon Willink) presiding. Dr. Bagster Wilson, in a statement as to the work of the mission, said they existed to pick up those who were maimed in the traffic and whirlpool of city life. The classes they dealt with might be divided into the aged, prematurely or otherwise, the ageing, hard-beset parents, children, and infants with their mothers. They endeavoured to prevent not only the maiming of physiques but the maiming of characters.

Nov. 5th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Ancoats Hospital: Annual Report.

THE eighty-fourth annual report of the Ancoats Hospital shows that the number of accidents treated during the year was 24,747 and of out-patients 11,705, as compared with 23,390 and 10,547 respectively in the previous year. During the last ten years the numbers have trebled, and many would-be in-patients had to be refused owing to the lack of the necessary accommodation. Out of a total income of £7412, £3908 have been received in subscriptions and £355 from the Hospital Saturday Fund. The expenditure was £10,407, but £1000 of this were spent on necessary repairs. The net balance due to the bankers for the year was £1240.

Salford Royal Hospital: Annual Meeting; a Generous Offer; Tribute to the late Dr. J. Dixon Mann.

The annual meeting of the subscribers to the Salford Royal Hospital was held on Oct. 24th. Owing to the lack of funds 35 of the additional beds in the new extension remained unoccupied. The deficit on the extension fund is about £10,000. The accident cases had increased from 13,600 to 14,836, and the opinion was expressed that the insurance companies and the work-people should testify their appreciation by subscribing more liberally to the funds of the hospital. The deficit on the year's working was £947. The sum received from the Hospital Saturday and Sunday Funds was only £429, as against £981 last year, and this though the hospital is now almost double the size. The new extension cost £66,500, and there was still a large deficit, which, counting everything, now stood at £12,000. This additional sum must be obtained if the hospital is to be free from debt at the end of the year. The president of the hospital, Sir William Mather, suggested to those persons who had it in their minds to do something for the Salford Hospital out of their estates, that it would not be a bad idea to anticipate the event. He personally guaranteed the sum of £5000 to be paid at the end of the coming year if £5000 could be contributed from other sources. If the £5000 could not be arrived at, he would guarantee the equivalent of the amount raised. At the conclusion of the meeting Sir William Mather unveiled a bronze tablet in the hospital to commemorate the work of the late Dr. Dixon Mann in the relief of the sick poor and the advancement of medical science. Dr. Dixon Mann was appointed in 1882, and was still on the active staff at the time of his death, and he was a great helper in forwarding the extension scheme.

Cost of Long-time Lunatics.

It is well known that the life of some lunatics is prolonged, and should they happen to be placed under control at an early period of their existence the cost of their maintenance mounts up steadily, even though, as in the case of pauper lunatics, the amount paid for it may be less than half a sovereign a week, or about £25 per year. Some patients have been in asylums since the late "sixties." The Prestwich board of guardians has spent £6226 on the maintenance of six lunatics who have been under its care for periods varying from 30 to 48 years. This is a not uncommon experience in asylums. Some patients have been in Whittingham Asylum since it was opened in 1873.

Report of Medical Officer of Health of the County.

The twenty-third annual report of Mr. E. Sergeant, county medical officer of health, has just been issued. It shows a birth-rate of 22·64 per 1000 of the population for last year, as against 22·48 for 1910. Having regard to the fact that the county population for 1910 was miscalculated, it turns out that the rate for 1911 is actually the lowest on record. The average for the last ten years was 25·09. The general death-rate was 15·05, or 2·32 per 1000 above the previous year. The infant mortality reached 144 per 1000 births, owing to the exceptional temperature of the third quarter of the year. The total of births was 39,134 (19,917 males and 19,217 females), being a decrease of 1190 births. Industrial areas have the highest birth-rates, while the lowest rates are in the best-class districts. In the districts with the highest birth-rates, 32·4 per 1000, the death-rate was equal to 18·3 per 1000 and the infant mortality 173 per 1000 births. In the districts with the lowest birth-rates, averaging 13·3, the mortality was 10·9 and the rate of infant deaths 79. Pulmonary tuberculosis caused 1528 deaths, or 87 more than in 1910, but the average rate is exactly the same as the decade 1901–11.

After-care and Residence of Inebriates Released from Reformatories.

The Manchester justices have carefully considered the provisions of the Inebriates Bill now before Parliament, more especially as it deals with the care of women inebriates who have been discharged from such a reformatory as Langho. Such discharged persons it is proposed should be placed on probation for 12 months, and during that time should be under the care of a guardian to be appointed by the board of management of the reformatory. The committee unanimously agreed to recommend that whenever a guardian having the care of a discharged inebriate should consider it necessary during the probation period he should have the power to prescribe the place of residence of the inebriate, and that the person should not be allowed to leave that place without the written consent of the guardian. It was therefore proposed that Subsection (*c*) of Section 26 of the Bill, which reads, "He shall not change his abode without previously giving notice of his new address to the guardian," should be altered so as to read "He shall, if required so to do, reside at a place of abode selected for him by the guardian, and he shall not change such abode without the written consent previously obtained of the guardian so to do. He shall not change any abode selected by himself without previously giving notice of his intended new abode to the guardian."

Nov. 4th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Liverpool School of Tropical Medicine.

THE school has arrangements in hand for the despatch of an important expedition to Jamaica and the West Indies, this making the twenty-ninth expedition of the school. The chairman of the school, Sir William Lever, will proceed shortly on an extended tour in West Africa, and will be able to see for himself the circumstances under which Europeans have to work in that climate, and the practical benefits that have resulted from the tropical school's propaganda against disease in the tropics.

Bequests to Liverpool Charities and the University of Liverpool.

By the will of the late Mr. Thomas Bartlett the following institutions have benefited: The Royal Infirmary, the Royal Southern Hospital, the David Lewis Northern Hospital, and the Stanley Hospital, each a bed. A bequest of £20,000 to the Home for Epileptics at Maghull, to be called after the testator. A sum is bequeathed to the University of Liverpool for establishing a scholarship for engineering students. The legacies are to be free from legacy duty.

Heswall Sanatorium.

At the weekly meeting of the West Derby guardians held on Oct. 23rd the minute of a special committee appointed to consider the proposals of the West Derby, Liverpool, and Toxteth Park joint hospital committee to negotiate for the sale of Heswall Sanatorium to the Local Insurance Committee was discussed. The clerk reported regarding the financial aspect of the proposed sale, also as to the original outlay on the land and buildings, and on subsequent repairs and improvements thereto. The special committee had agreed to a recommendation that the request of the Insurance Committee, as represented by the medical officer of health of Liverpool, be acceded to, subject to the three Poor-law authorities concerned being reimbursed to the extent of the total outlay on the scheme, and to their being indemnified as regarded all existing liabilities in connexion therewith; also subject to preferential treatment being reserved for the admission to the sanatorium of any urgent special cases from the three unions. The guardians eventually adopted the recommendations of the special committee.

Lunacy in Lancashire.

An interesting report has been submitted by the representatives of the Liverpool city council upon the Lancashire asylums board, from which it appears that the average number of patients in the asylums during the year was 11,357—a decrease at the end of the year of 11, as against an increase last year of 39. Adding those in licensed houses, workhouses, or with relatives, the total for the whole county is 14,806, as against 14,516 in December, 1910. The number of inmates in the asylums chargeable to Liverpool on Dec. 31st, 1911, was 2866. To these must be added 467 persons in workhouses, &c., making the total of insane persons at the end of 1911 3333. Taking the estimated population of Liverpool at 749,500, this number gives a ratio of 1 to 225, as against 1 to 324 for the whole county, 1 to 444 in the administrative county, and 1 to 269 in England and Wales in January, 1912; and 1 to 535 in England and Wales in the year 1859. The increase in the insane under care on Jan. 1st, 1912, compared with Jan. 1st, 1859, was 269 per cent., and compared with Jan. 1st, 1869, about 155·1 per cent., whilst the increase in population in similar periods was only 85·6 per cent. and 64·6 per cent. respectively. From these figures it would appear that insanity has increased at an alarming rate, but the ratio of pauper lunatics to the whole population has only increased 3·52 per 10,000 in the ten years ended January last, though the persons under care at the same date show an increase of 22·5 per cent. compared with a decade ago. The ratio of known insane in 1859 per 10,000 was 18·67, compared with 37·12 in 1912, or an increase of 98·8 per cent.

Royal Albert Institution, Lancaster.

The annual meeting of supporters of this institution was held on Oct. 28th at the Liverpool town hall under the presidency of the Lord Mayor. Out of the 714 feeble-minded individuals now being educated, cared for, and employed by the institution, 68 are from the Liverpool district, and the cost of these during the past financial year has exceeded the contributions of the city by no less than £500. An interesting development of the work of the institution has been in the direction of an extension of the farm and industrial colony system, which has been found by experience to have the best ameliorative effect on the patients. The estate has been increased to 205 acres by the purchase of an adjoining farm, and the committee has undertaken the immediate formation of a farm colony for 40 inmates, for which purpose a commodious building will be erected.

Nov. 5th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Edinburgh Infants' Home.

THE need of a home for unmarried mothers and their babies has impressed itself upon those who have had experience of rescue work in Edinburgh. The Lauriston Rescue Home receives girls for a short time before their confinement, which is conducted in the Maternity Hospital, and when they leave this institution at the expiry of ten days they are completely lost sight of as a rule. It is impossible for the majority of these women to return home with an illegitimate child, they therefore on leaving the maternity hospital seek to board out the baby and to find work for themselves. This is bad, both morally and physically, for the mother, and more so for the child, thus deprived of home, mother's milk, and proper nursing. Anyone who is associated with the out-patient work of a children's hospital knows of the number of illegitimate babies who are seen only when *in extremis*, and whose condition has been brought about simply by want of proper care. This home has therefore been started on a small scale, to try and correct this evil, and to give the baby a healthy natural start in life, and to help the mothers—often quite young girls—to find good homes where the baby may eventually be boarded out, and generally to strengthen and develop the mother's character, so that when she leaves the home she may be able to lead a better life. The home is, therefore, for the unmarried mother and her first child. She must nurse the baby at the breast and must stay at least two months. No mother is kept longer than nine months, but on leaving the home the mother may leave the baby there till it is a year old on payment of 5*s.* weekly. The mother has to pay 5*s.* weekly for the first two weeks, after which 2*s.* 6*d.* weekly is obtained from the father, if possible, and 2*s.* 6*d.* from the mother if she has money, otherwise she is kept free on condition of doing work for the home. A donation and subscription list has been opened, and it is hoped will have the full support of the charitable public.

A Public Medical Service Scheme.

At a general meeting of the Edinburgh and Leith Medical Practitioners' Association a discussion was held as to the possibilities of a public medical service for Edinburgh district. There was a large attendance, and a scheme which had been considered by the committee was debated by a considerable number of those present, but no definite conclusions were arrived at.

Small-pox in Kirkcaldy.

Fourteen days have now elapsed since the last case was reported from the Linktown district of Kirkcaldy. This formed the seat of the epidemic, and most of the cases have been located there. The incubation period of the disease has practically expired since the case in Dysart was reported, and that district also remains free of further infection.

Typhoid Epidemic in Aberdeen.

Sixty-two cases of typhoid fever have now been notified in the city of Aberdeen. The source of infection has not yet been conclusively determined, and the medical officer of health again urges upon the general public the desirability of boiling all milk and water before use.

Highland and Islands Medical Service.

At the Highlands and Islands Medical Service committee meeting on Oct. 29th, at Oban, Sir John A. Dewar, Bart., M.P., presiding, the following gentlemen from South Uist and Barra gave evidence: Dr. Riordan, Daliburgh; Rev. Father MacDougall, Daliburgh; Rev. Father Hugh Cameron, Castlebay; and Rev. Father MacPhail, Eriskay. They showed that the problem of providing adequate medical attendance in those islands was a peculiarly difficult one. Medical men could not easily be induced to settle there because of their isolation and extreme poverty. Even when the salary paid by the parish council was proportionately high for the number of paupers, the medical men did not remain long. A club system of payment of 5*s.* per "smoke" had been tried, but so far had not been successful, the total amount of the club fees plus the parish council salary affording only inadequate remuneration.

It was shown that much illness—in one district 40 per cent.—was left without medical care, as was shown by the high percentage of uncertified deaths. The difficulty of travel throughout the islands was also commented on. Tuberculous disease, both pulmonary and otherwise, had spread rapidly in recent years, and demanded the immediate attention of the authorities; probably this rapid increase was the result of deficient and improper feeding of infants. The necessity for a nursing service was also strongly urged.

The Education of Imbecile Children.

The annual meeting of the Aberdeen Ladies' Auxiliary of the Scottish National Institution for the Education of Imbecile Children at Larbert, was held on Oct. 30th, Lord Provost Maitland being in the chair. The chairman remarked that a number of children from Aberdeen and district had been treated at the institution. He hoped that Aberdeen, which had for many years supported this institution, would continue increasingly to do so. Dr. R. D. Clarkson, secretary and medical superintendent, said there were at present some 375 children at Larbert; but they would have to reduce the number. Each child cost £30 a year, and he did not think this could be much reduced. Therefore, their institution made a special appeal to everyone who wished to encourage Scottish independence to help those who did not wish to get help from the parish council. Dr. Clarkson further said that in that country alone it was estimated that while there were six or seven thousand mentally defective children well enough provided for, there were two or three thousand in urgent need of provision.

Measles in Golspie.

There is a very severe epidemic of measles prevalent in Golspie, only 100 out of a possible 300 pupils being at present in attendance at the public school. A large number of adults and children under school age are also affected. Several deaths have occurred, and many cases have been severe.

Nov. 5th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Ireland and Medical Benefits under the National Insurance Act.

As a result in part of the failure of the Friendly Societies to make arrangements for medical attendance at very low rates, and in part of Mr. Lloyd George's promise of more money to pay for medical benefits in Great Britain, an agitation has sprung up in Ireland in favour of extending the medical benefit to this country. So far no representative medical body has expressed any opinion for or against the proposal. The Advisory Committee at its meeting last week declared in favour of the extension of the benefit, as did also the Dublin Trades Council at its last meeting. Some of the demands put forward by the Friendly Societies are conditional on the dependents of the insured being included in the benefit, service to be given to the family in Ireland. It will be remembered that on Oct. 24th, in reply to Mr. J. Redmond, the Chancellor of the Exchequer said he had always made it clear that the question of extending medical benefit to Ireland was a matter entirely to be determined by the Irish people themselves. At an interview between a subcommittee of the Belfast Local Medical Committee and a deputation from the Friendly Societies held on Oct. 29th, it was stated by the latter that they were most anxious for the extension of medical benefit to Ireland, a fact indicating the feeling among the working-classes in the great industrial city. Again, in Dublin on Oct. 30th, at a meeting of the Advisory Committee to the National Health Insurance Commission (Ireland), at which the chairman of the Irish Insurance Commissioners presided, resolutions were adopted recommending the placing at the disposal of the Irish Commission the equivalent of the additional grant to be given in Great Britain, the extension of full medical benefit to Ireland, and that the Government be asked to appoint a committee to inquire into and to report on the subjects. All the original medical members of the Advisory Committee, with the exception of the Right Hon. M. F. Cox, resigned their seats some time ago at the request of the British Medical Association; but other medical men have been found willing to take their places. At the meeting of the Advisory Committee Dr. Cox is officially reported to have taken credit for dissociating himself from his professional brethren in remaining a member of the Committee. He also concurred in the suggestion that the medical benefit in Ireland should include attendance on women and children as well as on the insured person.

A Model Scheme for the Treatment of Tuberculosis.

The Conjoint Committee, representing the medical profession of Ireland, recently issued a model scheme in conformity with the recommendations of the British Medical Association for the treatment of tuberculosis. Its main principle is the restriction of the work of the tuberculosis officer and all whole-time officers to consultative work. The treatment should be decided on in consultation between the patient's medical attendant and the tuberculosis officer, and all domiciliary treatment should be carried out by the former. The number of visits likely to be required should also be arranged in consultation. The following are suggested as suitable minimum fees: For report, 5*s.*; for consultation with tuberculosis officer, 5*s.*; for visit to patient or for visit of patient to doctor, 2*s.* 6*d.*; for night or special visits, 5*s.*; mileage 1*s.* per mile after first mile.

Training in Tuberculosis Work.

The Local Government Board has provisionally sanctioned the appointment of candidates for the post of chief tuberculosis officer appointed by the councils, on condition that those who do not fulfil its requirements immediately proceed to obtain the requisite qualification. Need has therefore arisen for a training course in Ireland. The Collier Tuberculosis Dispensary and the Allan Ryan Tuberculosis Hospital in Dublin, which had obtained the recognition of the Local Government Board for such teaching, finding the work too extensive, have invited the coöperation of the ten general teaching hospitals of Dublin. It has also been suggested that the Dublin clinical hospitals should provide, independently of the special institutions, the necessary training. Both schemes are at present under consideration.

Care of the Feeble-minded.

The justification of this country being excluded from the provisions of the Mental Deficiency Bill before Parliament has been questioned. Such legislation is even more necessary in Ireland than in the sister countries, as there are neither legal provision nor institutions for the feeble-minded in Ireland, while the Royal Commission on the Care and Control of the Feeble-minded found the proportion of mental defectives higher in Ireland than elsewhere in the Kingdom. From lack of proper institutions many feeble-minded persons have to be cared for in asylums, which is bad for the patients and expensive for the community. Those not in asylums for the most part receive no care, but are left to drift into degradation and crime, and to pass on their defects to their offspring.

The Dispensary Doctor and the Public.

At a meeting of the Kilmacthomas guardians last week Miss Poer O'Shee, one of the guardians, declared that for years past she had supplemented out of her own pocket the salary of the Poor-law medical officer of Bonmahon, to secure for the poor the services of a competent medical man. She pointed out that a boycott had been growing against the Irish Medical Service as a career, because it was disgracefully underpaid in proportion to its responsibilities, and was far too subject to wire-pulling and shielding of open unfitness for the work, so that the coming young men whom the service needed were refusing to compete for it and leaving the country. At Rathvilly, co. Carlow, also, where there is a vacancy for a dispensary medical officer, a public meeting was held last week at which the chairman, the Very Rev. Father Delaney, pointed out that for the poor man, woman, or child stricken by accident or disease there was no alternative but to take the doctor that public charity provided for them. For them the election of a medical officer was often a matter of life or death. A unanimous resolution called on the guardians not to pledge their support to any candidate until they had an opportunity of learning the claims of all candidates. Such sound views as to the duties of guardians to select a capable medical officer and to pay him an adequate salary are unfortunately none too common.

The Belfast Guardians and the Medical Profession.

At a meeting of the Belfast board of guardians held on Oct. 29th it came out that, in reply to the guardians' advertisement for two resident medical officers, they had only received one application, which was afterwards withdrawn. It was subsequently agreed to ask the Belfast Medical Guild to meet the infirmary committee to discuss the situation. It will be recollected[1] that the Medical Guild some time ago wrote to the guardians, asking for an increase in the salaries of the resident workhouse medical staff. A letter was also received by the guardians and subsequently referred to the infirmary committee from the resident medical officers of the Whiteabbey Sanatorium, complaining that their accommodation was totally inadequate.

Scarlet Fever in Belfast.

At a meeting of the city council held in Belfast on Nov. 1st, the medical officer of health reported that scarlet fever was very prevalent in some parts of Belfast (especially in a district on the east side of the city known as Ballymacarrett) in which, during the period Sept. 15th to Oct. 19th, 178 cases were notified, being 68 in excess of the preceding month, and 54 in excess of the corresponding period last year. While the type of the disease is—in the main—mild, 13 deaths have occurred during the month, an indication of its virulence in certain people attacked.

Nov. 5th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Preventive Vaccination for Typhoid Fever.

IT is 25 years since the experiments of Chantemesse and Widal showed that laboratory animals could be successfully vaccinated against fatal doses of typhoid virus with cultures of the typhoid bacillus killed by heat. From three to four injections, of increasing doses, were required at intervals. This immunisation was not absolute, for while most animals so treated became immune, a few remained still sensitive to the typhoid toxin. Later preventive inoculation was employed practically in England and in Germany in the case of soldiers, and after its further trial in the United States and Japan it was compulsorily employed last August on the French troops stationed at the Algerian and Moroccan boundaries. The hygienic laboratory of the Faculty has since supplied 17,000 doses. No accident, either local or general, has occurred. In most cases there has been no rise of temperature. Dr. Chantemesse has pointed to the case of the Moroccan troops; while last year they suffered from typhoid in the proportion of 15 per 1000, the proportion has fallen this year after preventive vaccination to 5 per 1000, the mortality ratio having also declined to a yet greater extent. Favourable results have also occurred among the civil population. Among all the nurses of the Hôtel-Dieu who have been vaccinated for 18 months and who care daily for the typhoid patients not a single case of typhoid has occurred. In order to protect his nursing staff, M. Mesureur, the director of the Assistance Publique in Paris, has established at the Salpêtrière an anti-typhoid vaccination service under the direction of M. Crouzon. Up to the present M. Chantemesse prefers to the living virus, the injection of a chemical material (*d'une matière chimique*) in ample doses, because he can be sure that it will not multiply in the body, and that it is harmless as well as efficacious. In those properly vaccinated there is no so-called negative phase, no reaction either immediate or delayed, no serious troubles of health, no prolonged interruption of work beyond a few hours, and these persons are, he considers, much less likely than non-vaccinated ones to contract typhoid, and stand it better if they are attacked.

A New Institute for Scientific Research.

The property known as the Hôtel Paillard, at Bellevue, near Paris, has been purchased by an American millionaire philanthropist, Mr. Paul Singer, for the purpose of founding an Institute for Scientific Research on the plan of the Rockefeller Institute in New York.

The Origin of Appendicitis.

On Oct. 22nd at the Academy of Medicine a solution was propounded of one of the disputed points in regard to the origin of appendicitis. Professor Widal reported notes of a case of ill-defined general febrile infection, in which the blood examination revealed the presence of the bacillus paratyphosus B, and in which a fulminating appendicitis appeared on the fifteenth day, carrying off the patient in 24 hours. At the necropsy a perforated appendix was found without any intestinal lesion. From these facts it is conjectured that appendicitis may have its sole origin in germs circulating in the blood. This would explain many at present obscure cases of this nature.

The First International Congress of Comparative Pathology.

A new medical congress, the First International Congress of Comparative Pathology, took place last week in Paris. The opening meeting was held in the Grand Amphitheatre of the Faculty of Medicine, under the presidency of M. Guisthau, Minister of Public Instruction. There were more than 1200 members, and the number of communications announced was 200. Professor Roger delivered the opening address, after which the Minister welcomed the official representatives of all countries. The principal result of the work of the Congress has been the establishment of an understanding among the scientists of all countries as to the identity of human with bovine and ovine tuberculosis, a conclusion of the most momentous character in regard to veterinary sanitary police. Among other new discoveries announced at this Congress, the special corpuscles discovered by Negri in the brain of man and animals who have died from hydrophobia are said to be really micro-organisms whose presence is related to the disease—the corpuscle is itself a micro-organism or represents an encystment of micro-organisms. Mention should also be made of the interesting communication of Dr. Springer as to the action of electricity on the growth of plants and animals. One of the important and lasting results of this congress is the establishing of a permanent international commission, with headquarters at Paris, which, among other objects, will devote itself to drawing up an international plan for the regulation of parasitic affections in connexion with plant life.

The International Association of Pædiatry.

This association held a congress at Paris from Oct. 6th to 10th, under the presidency of Professor Rutinel. Reports were presented on Infant Anæmias. The first, by Dr. L. Tixier, discussed the hæmatologic details of the anæmias; the study of the hæmatopoietic organs; the cytologic, biologic, and hæmoglobin researches; the pernicious anæmias; the therapeutic data; and antihæmolytic therapeutics. Professor Jemma presented a paper on the Anæmia due to Leishmania; M. Czerny one on Anæmia of Alimentary Origin. Reports were presented also on Infant Paralysis by M. Edouard Müller, of Bokay, M. Johannesen, Mme. de Biehler, M. Netter, M. Figueira, and M. Schreirer; on the Sequelæ of Poliomyelitis and their Surgical Treatment by M. Ombrédanne. Communications on Rhachitism were made by M. Delcourt, M. Valagussa, M. Rockzínski, M. Gilliberti, and M. d'Oelnitz. The next congress will be held at Brussels in September, 1915.

Action against a Surgeon.

An action of some professional interest has been brought against Dr. Lecène, surgeon to the Hôpital Bichât, by M. Chassin, employed by him as an artist, under the following circumstances. For the purpose of undergoing an operation for appendicitis M. Chassin had been anæsthetised with chloroform and the field of operation washed with soap, ether, and alcohol, which were then wiped up with compresses. Noticing a small patch of acne (*bouton d'acné*), Dr. Lecène was about to apply the thermo-cautery to it when some traces of alcohol remaining on the body caught fire, with the result that the patient was severely burnt over a considerable surface. He brought suit for 60,000 francs damages. The court appointed three experts, Dr. Pozzi, Dr. Reclus, and Dr. Duval, who expressed the opinion that there was no professional fault attaching to Dr. Lecène. They attributed the accident to a deformity of the patient's hip, due to a coxalgia in youth, which permitted of the collection of a little alcohol in a very deep sulcus in the inguinal fold. In consequence of the exaggerated lumbar curvature due to the patient's inability through ankylosis to lie flat on the table, some of the alcohol had trickled down, saturating the wrappings under his arched back. The court, however, did not adopt the experts' conclusion, but decided that Dr. Lecène was liable at civil law

[1] See THE LANCET, Nov. 2nd, 1912, p. 1252.

for professional negligence, in that he was well aware of the patient's deformity, and consequently had erred in not taking precautionary measures. They therefore awarded M. Chassin 16,000 francs damages.

Nov. 5th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Balkan War and the Austrian Medical Profession.

THE sudden outbreak of the Balkan war is making itself deeply felt in this country, not only for political and commercial reasons, but also as regards our profession. There are in this empire several separate nationalities of Slavonic origin whose sympathies are naturally with their co-nationalists now fighting against the Turks. Numerous medical men of Slavonic descent have therefore proceeded from Austria to the Balkan peninsula, partly with the Austrian associations for succouring the sick and wounded, the Red Cross to Montenegro and Bulgaria, and the Red Crescent to the Turks, and partly in an independent capacity, their presence and aid being gladly accepted. In addition to this racial fellow-feeling it must be remembered that the Austrian hospitals and medical schools are the principal places to which Balkan students resort for the purpose of learning their profession and obtaining qualifications to practise. These visitors from abroad are all absent now, serving their respective countries in the field, with the result that numerous posts in our hospitals which were held by Slavs or Greeks are now vacant and have to be refilled. From our two surgical clinics in Vienna the chief assistants (mostly Germans) have been despatched to the theatre of war by the Red Cross, which has also sent out a large number of trained nurses, together with the necessary outfit for field hospitals, and special mountain carts for the transport of the wounded. These latter have not yet been used anywhere, but it is expected that they will be very serviceable in the hilly country where there are so many wounded. Another effect of the war has been an enormous sale of articles necessary for hospitals and the treatment of wounds. Very extensive orders are still coming in from Greece; the Austrian military authorities have also been busily preparing for possible emergencies, and every medical man in the empire who is capable of serving knows by this time where he will be expected to work in case of a call to arms.

A New Medical Society in Vienna.

Two enterprising medical men in this city have undertaken the task of founding a new medical society in addition to the numerous ones already existing here; or perhaps it would be more correct to say that their endeavour is to unite all that there now are into one general medical society, of which the existing smaller societies would be branches. The idea is considered a good one, for we suffer from an undue multiplicity of small societies, and the funds as well as the time of the members are sadly split up by the present conditions. If the scheme receives sufficient support to enable it to be carried into practical effect a working method will be easily found, and this Austrian equivalent to the English Royal Society of Medicine will undoubtedly be a great boon to scientific life in this country.

Birthday Honours to Professor Kassowitz.

A few days ago Professor Dr. Kassowitz celebrated the seventieth anniversary of his birthday and was the recipient of many congratulations in honour of the event. In addition to being a pioneer in the department of pædiatrics he was one of the founders, and is the chief leader of the Austrian Anti-alcohol Society, and both the Government and the scientific corporations of this country took this opportunity of showing the esteem in which they hold him. A "Festschrift," to which many of Professor Kassowitz's former pupils contributed interesting articles, was published in honour of the occasion, and a special meeting of the pædiatric section of the Vienna Medical Society was held at which he discussed the influence of hypothesis on science, arguing in the course of his address that popular ideas should not be accepted by science until they have been corroborated by exact investigations.

The Relations between Bodily Constitution and Disease.

Professor A. Weichselbaum, the eminent pathologist, who has just been installed for this year as Rector Magnificus of the University of Vienna—the highest honour in the gift of our *alma mater*—delivered on this occasion an instructive address on the relations between bodily constitution and disease. He said that medical opinions on this question differed a good deal at various times, for ancient authorities as represented by the Hippocratic treatises and Galen were mostly in favour of the "humoral" hypothesis, according to which the body as a whole became diseased, while later investigators as represented by Virchow denied the universality of any pathological condition from which a patient suffered, and maintained that each disease was an affection of certain organs alone. More recent research, however, has shown that the same morbific agent acted differently in different persons, and therefore we were bound to suppose that the constitution or bodily conditions of the patient played a prominent part in the course of disease. Such clinical observers and pathologists as His, Martin, Paltauf, and Pfaundler have shown that anomalies of constitution were apt to influence in a high degree the progress of a disease and the clinical events following a surgical operation. The heredity of such anomalies was a fact not to be overlooked. As regards the problem of racial degeneration, it was important to note that there there could be no doubt (1) as to the increase of mental disease, of suicide, of caries of the teeth, and of myopia; and (2) as to the dying out of the masculine branches of eminent families, especially in towns. The chief causes for the above-mentioned detrimental conditions were to be found in an educational system which overtaxed the mental capacity of individuals during the period of growth, in the abuse of alcohol, and in syphilis and tuberculosis. It should no longer be regarded as merely a Utopian ideal to demand from the State some means of eradicating these detrimental factors. Perfect freedom of scientific investigations was an absolute necessity in order to enable the true social economist to find out and lay his finger upon those evils, which must be rectified unless racial destruction be courted.

Nov. 4th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The State Medical Service.

THE tenth congress of the Medici Condotti, to be held this week at Cagliari, will be occupied with a serious question affecting the State Medical Service. For years the medici condotti have been agitating for the abolition of the "condotta piena," but the Association of Communes have recently decided that this institution must be retained. A little explanation is necessary. The "condotta" is a kind of "parish" appointment for the medical assistance of the poor, for which the commune pays a medical man a fixed salary annually. The medical man is obliged to reside in the district, and in this way the more prosperous classes are assured of having a doctor in the vicinity to attend to their needs. But these more prosperous classes have the administration of the communes in their hands and have instituted a custom of making the doctor attend the whole district irrespective of the poverty or wealth of the patients for a certain small addition to his original salary. In these circumstances the "condotta" is spoken of as a "condotta piena." The doctors, however, find that whereas the poor are rarely ill enough to ask for their assistance the wealthier classes call them for their least indisposition, keep them up all night, and in other ways abuse their gratuitous attendance. The medici condotti had hoped to have freed themselves from the tyranny of the communes by getting the control of the sanitary services transferred from the communes to the larger provincial administrations. This hope has proved vain, for the Association of Provincial Administrations has decided not to support the proposal. While there is so much talk in England of the possibility of the institution of a State Medical Service this experience in Italy is worth noting. The National Association of Medici Condotti numbers 7629 members.

The Accident to Signor Marconi.

On Sept. 25th, on the road between Spezia and Genoa, Signor Marconi was the victim of a serious accident. He was driving his motor car at a fair pace round a curve in

the road when he met a car travelling in the opposite direction. The two cars met with a tremendous shock; both carriages were wrecked, and a piece of glass from his wind-screen struck Signor Marconi in the right eye. He was removed to the Military Hospital at Spezia, when for some time it was hoped that the eye might be saved. Later symptoms of irritation appeared. On Oct. 15th Professor Bajardi was summoned from Turin to consult with Major Pastega, the eye surgeon of the Military Hospital. On Oct. 16th Professor Bajardi was again sent for, and Professor Fuchs from Vienna. Immediate extirpation of the right eye was decided upon and was performed by Professor Fuchs. The following bulletin was published in the evening: "The almost complete loss of sight in the injured eye, accompanied by grave symptoms of irritation, which increase the fears felt by the doctors at the consultation on Oct. 15th that conservation of the injured eye was dangerous, have decided us to sacrifice this eye. The operation was successfully performed this morning. The left eye is normal and the general condition is good." The after progress was uneventful. Signor Marconi left Spezia yesterday for Turin to see Professor Bajardi before going to Paris to have an artificial eye fitted.

The First National Congress of the History of Medical and Natural Sciences.

This Congress was held in Rome in the Castel Sant' Angelo in the middle of this month. The Congress was a great success. Papers were read upon Prehistoric Medicine, upon Ancient and Modern Votive Offerings for Therapeutic Purposes, upon the Sanitary Legislation of the Florentine Republic, upon the professional knowledge of the doctor in the Middle Ages, and upon his professional standing in those times, upon Malpighi, upon Morgagni, and upon Eustachio, besides many others.

The Croce Rossa in the Balkans.

The first Italian Red Cross expedition is about to start from Bari for Montenegro. It consists of a hospital of 150 beds with a field ambulance and complete outfit, accompanied by ten doctors and 40 male nurses. A similar unit will be sent to Greece. At Turin the Croce Rossa are getting ready a large and thoroughly equipped field hospital to send to Montenegro.

Oct. 29th.

Obituary.

FRANK MONTAGUE POPE, M.D. CANTAB., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE LEICESTER INFIRMARY.

BY the death of Dr. F. M. Pope, which took place at his residence on Oct. 26th, Leicester has lost a prominent citizen and the medical profession a member who was devoted to its interests. He was a man of great energy, and his equability of temper and strong sense of humour made him a genial and delightful companion.

Born in 1856, he was the son of Mr. Thomas Pope, of Harewoods, Bletchingley, Surrey, and received his early education at Leeds Grammar School. At the age of 16 he commenced the study of medicine under the tuition of a member of the staff of the Sussex County Hospital, Brighton, and after attending the practice at that hospital entered Magdalene College of the University of Cambridge, where he graduated B.A. in 1877, taking honours in both parts of the Natural Sciences Tripos. Subsequently he became a student at St. Bartholomew's Hospital and obtained the Membership of the Royal College of Surgeons of England in 1879. Two years later he took the M.B. degree at his University.

Previous to entering into partnership at Leicester in 1883 he successively held appointments as assistant house surgeon to the Great Northern Hospital, house physician to the Royal Hospital for Diseases of the Chest, City-road, and resident medical officer at the Small-pox Hospital at Stockwell. In 1886 he became a Member of the Royal College of Physicians of London (he was elected to the Fellowship in 1902, a year after obtaining the M.D. of Cambridge), and was soon after appointed honorary physician to the Leicester Infirmary, a position which he vacated in the spring of this year when he was elected consulting physician. In the work of the Leicester Infirmary, where for ten years preceding his resignation he was senior physician and chairman of the medical staff, he took a keen interest, and under his influence many important improvements took place. His interest was not, however confined to the Leicester Infirmary, for he was consulting physician to the Leicester Institute for Trained Nurses and the Nurses' Association in Leicester, both of which owe to him a debt of gratitude for his kindly solicitude and practical help, while to the Leicestershire and Rutlandshire County Lunatic Asylum he was also consulting physician and a member of the advisory committee of the Society for the Feeble-minded and a visitor of private lunatic asylums in the county. Indeed, in all that concerned the health and well-being of the borough he took an active part, and freely extended his help to local institutions in any way bearing on his profession. He evinced great interest in the St. John Ambulance Brigade, of which he was chief surgeon of the Leicester division at the time of his death, and was an Honorary Associate of the Order of St. John of Jerusalem. For his work in local organisation during the South African War he received the South African medal. He was also a Lieutenant-Colonel of the Fifth Northern General Hospital of the Territorial Force. He was a member of the National Association for the Prevention of Consumption, a medical referee under the Workmen's Compensation Act and for the Royal National Hospital for Consumption. In 1900, at the time of the centenary of the Leicester Medical Society, he was its president.

He was for long an active worker in the British Medical Association. At the annual meeting at Nottingham in 1892 he was secretary of the Section of Medicine, and at the annual meeting at Leicester in 1905 president of the same section. He had been a member of the Council of the Association and chairman of the Science Committee.

FREDERIC BAGSHAWE, M.D. CANTAB., F.R.C.P. LOND., J.P.,

CONSULTING PHYSICIAN TO THE EAST SUSSEX HOSPITAL.

THE death of Dr. Frederic Bagshawe, which occurred at his residence at St. Leonards-on-Sea on Nov. 2nd, removes from among us one of the best known provincial consultant practitioners. He came of an old Derbyshire family, and received his medical training at Cambridge University and St. George's Hospital. He graduated at Cambridge in Arts in 1861, and proceeded to the M.B. degree in 1863. He became a Member of the Royal College of Physicians of London in the following year, and took his M.D. degree in 1865. In the latter year, having held certain hospital appointments in London, he began to practise at St. Leonards-on-Sea and Hastings, and here he made his home for nearly half a century, although for many seasons he had also a successful practice on the Riviera. He was appointed to the staff of the East Sussex Hospital in 1871, and at his death he was one of the consulting physicians. In 1879 he was elected a Fellow of the Royal College of Physicians of London.

Notwithstanding his extensive practice he found time to interest himself in municipal matters, was for several years an alderman of the borough, and in the Jubilee year of 1897 occupied the mayoral chair with considerable distinction. He was afterwards made a justice of the peace for the county, and sat either at the Hastings county or Bexhill bench. Numerous charitable and other societies have lost a staunch and generous supporter in Dr. Bagshawe. He had been President of the East Sussex Medico-Chirurgical Society. He was a Vice-President of the Hastings District Nursing Association and the Hastings and St. Leonards Sanitary Aid Association, and indeed every organisation which had for its object the welfare of the borough or the poor and suffering found warm supporters in Dr. and Mrs. Bagshawe, a sister of Dr. W. Howship Dickinson, so long associated with St. George's Hospital. Dr. Bagshawe was President of the Hastings Health Congress, and he read a paper on that occasion on the Preventive Side of Medicine. He took a great interest in the youth of the locality, was a strenuous advocate of athletics and shooting, and presented the local battalion of the Church Lads' Brigade with a trophy, which is competed for annually. He was never happier than when interesting himself in some good cause, and though 78 years of age he was actively engaged in his work almost to the last. These brief notes show what an energetic and powerful friend the community in which he resided had in Dr. Bagshawe.

THE BRITISH MEDICAL ASSOCIATION; THE POSITION OF THE MEDICAL PROFESSION IN RELATION TO THE NATIONAL INSURANCE ACT.

AT the momentous debate of the Council of the British Medical Association on Thursday, Oct. 31st, the proceedings were so protracted that we were absolutely unable to report the conclusions arrived at under the third heading of the report of the State Sickness Insurance Committee if we were to keep our engagements in regard to the distribution of this paper. We now add the concluding paragraphs of the Report of the Council, which will be found as a whole in the *British Medical Journal* of last week.

Owing to the deletion of paragraph 90 (see THE LANCET, Nov. 2nd, p. 1260), paragraphs 91–100 in our report should be numbered 90–99. The division C of the report, which follows, deals with the present position of the medical profession in relation to the Act, and is in some ways the most important section of the report. Everyone should read the paragraphs most carefully.

We take this opportunity of recording our great obligation to the Council for the permission extended to the Editor of THE LANCET to be present during the proceedings.

C.—PRESENT POSITION OF THE MEDICAL PROFESSION IN RELATION TO THE NATIONAL INSURANCE ACT.

Comparison of Bill as Introduced into Parliament with Act and Regulations taken Together.

100. It now remains for the Divisions and Representative Body to consider the present situation preparatory to coming to the most momentous decision they have ever been called upon to make. The previous examination of the Regulations has indicated to what extent the terms now offered fall short of those demanded by the profession, but we must recall what the profession, through the efforts of the Association, has gained during the fight which began in May, 1911.

101. *Income limit.*—The Bill, as introduced, made no provision for an income limit of the kind demanded by the Association. The Act and Regulations make the imposition of such an income limit now possible in the sense indicated by paragraph 45.

102. *Free choice of doctor.*—The Bill did not give free choice of doctor, and, if it had been carried as introduced, the doctors for the insured persons would undoubtedly have been elected by the Approved Societies as the present club doctors are. The Act and Regulations, with the possible restriction contained in the Harmsworth amendment, as indicated in paragraph 57, give free choice of doctor.

103. *Administration of medical benefit.*—The Bill gave the administration of medical benefit to the Approved Societies. The Act and Regulations put the administration in the hands of the Insurance Committees, which, though they contain a majority of representatives of insured persons, also contain a considerable number of members representative of other interests, including the medical profession.

104. *Method of remuneration.*—The Bill said nothing as to the method of remuneration. The Act and Regulations leave it to be decided by the Insurance Committee after consultation with the Local Medical Committee.

105. *Amount of remuneration.*—The Bill said nothing as to the amount of remuneration, but the actuarial estimates showed that 6*s.* was to be set aside for the cost of medical attendance, drugs, and appliances; and in various speeches made by members of the Government or by others on their behalf, it was stated that in making such an offer the profession was being treated generously. The declaration of the Chancellor of the Exchequer on Oct. 23rd, 1912, increases the amount of 6*s.* to 8*s.* 6*d.*, from which a sum of not less than 1*s.* 6*d.* and not more than 2*s.* can be deducted for drugs and appliances.

106. *Representation on administrative bodies.*—The Bill gave no representation of the profession on any of the various bodies set up to administer the Act, although the Insurance Commissioners were required to appoint two medical practitioners upon each Local Insurance Committee. The Act gives representation of the profession among the Commissioners, on the Advisory Committees, and an increased number on some Insurance Committees.

107. *Local Medical Committees.*—The Bill made no provision for the institution of any Local Medical Committee specially representative of the medical profession. The Act and Regulations give the profession power to elect a Local Medical Committee in every area, with an extensive range of duties, and the right of being consulted on all questions concerning medical administration, as was demanded at the Special Representative Meeting, June 1st, 1911.

FUTURE ACTION.

108. The question for the Association at the present moment is whether the terms now offered for medical attendance and the conditions of service as defined in the Regulations are, taken as a whole, such as will justify the profession in entering into arrangements with Insurance Committees to undertake the medical treatment of the insured. This manifestly cannot be done without abandoning the idea that there must be no local bargaining, because it is evident from the Regulations that the Commissioners cannot, or will not, fix all the arrangements centrally. The greatest use they will make of their powers in this direction is to insist upon all local arrangements with the medical profession being inoperative without their approval.

109. To arrive at a decision on this matter it is necessary to consider what are the alternatives before the profession. On the one hand, there would be a system which, with all the drawbacks detailed in a previous section of this Report, foremost amongst which is the loss of the independence of private practice in respect of a certain section of insured persons, would, with the possible exception of the Harmsworth Amendment, allow free choice of doctor; would allow such a local income limit as the Local Medical Committee desires, and is strong enough, with the support of the Association, to enforce; would give the profession the right to be consulted on all matters relating to medical service, with an appeal to the Commissioners if not satisfied with the local result; would give the profession, if it so desire, in every area a statutorily recognised Committee with important duties and powers; would throw the onus of the administrative work connected with the collection and distribution of the subscriptions of the insured persons on a lay authority; would secure that every insured person, unless allowed or required to make his own arrangements, would be compelled to contribute towards the cost of his medical attendance; and which would secure to the profession throughout the country a payment for medical attendance of 6*s.* 6*d.* per insured person.

110. On the other hand, if the profession decline to accept this arrangement it is faced with the following situation:—(a) The Insurance Committees will attempt to set up a panel in each area, and it is probable that in some areas panels, though inadequate and not representative, would be formed. In such areas the panel would undoubtedly be taken advantage of by a section of the insured. In the opinion of this Council the Act could not be satisfactorily administered on this plan. (b) The Government would probably attempt, in certain urban districts, to inaugurate a National salaried service, either whole or part time, and the assurance of a fixed salary would undoubtedly attract some members of the profession. Though the Council does not believe that such a service would be attractive either to the profession as a whole or to the majority of the population, it is not unlikely that in some areas it could be established with success, and might prove a dangerous precedent in undermining the system of private practice. (c) Insurance Committees, where no panel was available, and a salaried service could not be established, would require the insured to make their own arrangements. Where a limited panel was available, the Committee would provide in this way for such of the insured as were willing to accept the panel doctors, and would allow the rest to make their own arrangements. In districts where a panel could not be formed, or was absolutely inadequate for the needs of the district, medical benefit would be suspended. In all these cases there is no guarantee that the money available for medical benefit would find its way into the hands of the doctors. There would be no compulsion on those allowed to make their own arrangements or on those whose medical benefit was suspended, to make provision for their medical attendance. The thrifty would do so, while others would, as at present, take their chance. During the period of good health no money would accrue to the profession from the latter class; during the period of ill-health they would probably run up bills which would in a large number of instances not be paid, or they might apply to medical charities. The Approved Societies would in these districts have a strong temptation to set up institutions with salaried officers and urge their members to obtain their medical attendance in this way.

111. All possible steps have been taken to organise the profession, so that in the event of their not agreeing to take part in working the Act their interests will be as far as possible safeguarded. The honorary staffs of many hospitals, in carrying out the spirit of the pledge which they have signed, have sent in to their governing bodies an intimation of their intention not to attend insured persons in hospitals except in cases of emergency. Public medical service schemes have been drawn up and are in course of adoption in many areas. Central and local defence funds have been instituted for use in defending the interests of the profession.

112. The obvious reply of the profession to these modes of attack by the Government, the Insurance Committees, and the Approved Societies would be to carry on private practice as heretofore, or to establish a Public Medical Service, and to refuse to attend those who are below the locally demanded income limit, unless they joined the service.

113. In this connexion the strong and weak points of the Public Medical Service should be carefully considered. A Public Medical Service entirely under the control of the medical profession could undoubtedly secure free choice of doctor, freedom from Friendly Society control, a wage limit, and method and amount of remuneration to be as the profession thought fit, subject, of course, as far as the amount is concerned, to the willingness and ability of the patient to pay. Above all, it would secure that independence of the profession which has been the fundamental principle underlying the whole of the fight of the profession against the provisions of the Act. But considered as an alternative to the machinery of the Act for the working of medical benefit, the Public Medical Service has certain disabilities. It has no power of compulsion, it imposes upon the profession at all times a great deal of administrative work, and at the outset a considerable financial responsibility in respect of the necessary clerical, printing, and other expenses incidental to the establishment of such a service. Moreover, there is not the same guarantee against members of the profession standing aloof from the service and undertaking contract practice on a lower scale, as would be afforded by the panel system under the Act. The contract under the Act being made on behalf of the insured person, and his contribution being a fixed amount, there is no pecuniary inducement for him to attempt to enter into a contract at a lower figure, if the panel system is in operation, though there would be if medical benefit were suspended and the money were placed at the patient's disposal. Finally, the cost of administration of a Public Medical Service run on the most economical lines, judging by the experience of the various services now at work, would probably not be less than 15 per cent. of the income.

114. The above facts must be carefully weighed by the profession. If, on their consideration, the profession is of opinion that, though it has not succeeded in getting the full extent of its demands, it has yet succeeded in extracting from the Government terms which render it possible to give the panel system a trial, the following might be laid down as fundamental principles under which alone the trial could be made:—(a) All agreements to give medical attendance and treatment under the Act should be of a purely provisional character. (b) No arrangements of the kind should be entered into by any Local Medical Committee until they have been approved by the Council of the Association. (c) The whole force of the Association, together with

all the resources of the Defence Funds, should be placed at the disposal of those areas which fail to secure such terms as they consider to be necessary and which are approved by the Council of the Association. (d) Every effort should be made to maintain private practice as heretofore, or in any area in which the profession desire, to establish a Public Medical Service. (i.) to provide for the medical attendance on such of the uninsured as are unable in other ways to pay for their medical attendance; (ii.) to be utilised for the insured persons in every district where the profession is unable to secure proper terms from the Local Insurance Committee; and (iii.) to be held in reserve in every area where arrangements made with the Insurance Committees after trial prove to be unsatisfactory to the profession.

The Council in placing this record of the situation before the Divisions and Representative Body for their careful consideration adds that it will be for these bodies to decide whether they consider that the conditions of service and remuneration under the Act are such as to justify the profession in provisionally accepting service. It asks the Divisions to instruct their Representatives whether they desire:—

(*a*) To give service under the Act under the conditions set out in paragraph 114 of this Report, or

(*b*) To refuse service under the Act.

Finally, the council, in impressing upon all members of the Association the vital necessity of attending the divisional meetings called to consider this report, states that the honorary secretaries of divisions have been asked to invite the attendance at their meetings of members of the profession who are not members of the Association, though these will have no right of vote in the instruction of Representatives.

A special meeting of the Representative Body has been called for the purpose of receiving and considering the above report, and of passing resolutions arising therefrom or in reference thereto. This will be held in the Connaught Rooms, London, on Tuesday, Nov. 19th, Wednesday, Nov. 20th, and, if necessary, Thursday, Nov. 21st.

Three appendices are added to the report. Appendix A sets out the Resolutions of the Annual Representative Meeting of July last, under one of which (Minute 215) the existing State Sickness Insurance Committee was constituted, this report being the outcome. Appendix B is the Model Scheme of the Association for the treatment of tuberculosis, which was published in the *British Medical Journal* of Oct. 5th, 1912. Appendix C is an outline scheme of local arrangements for medical attendance under the Regulations of the Commissioners.

THE NATIONAL INSURANCE ACT.

A STATEMENT BY THE CHANCELLOR OF THE EXCHEQUER TO THE BRITISH MEDICAL ASSOCIATION.

AT the meeting of the Council of the British Medical Association on Thursday, Oct. 31st, it was very generally felt that further information than was provided by the Regulations was required for the full comprehension of many points in the Act. As a consequence the British Medical Association addressed to the Chancellor early this week a request for further information on the following points: (1) the increased service to be required from doctors, which would seem to imply some system of inspection of the records to be kept and of the scientific standard of the services rendered; (2) the amount of work to be demanded from the medical men on the panels—i.e., a definition of medical benefit, showing whether fees for consultations, major operations, and specialist services are to be outside the range of the capitation grant; (3) the new wording of Regulation 21, dealing with the mileage question; (4) "the abnormal drug fund"—will the Commissioners be able to make grants from this fund to meet any proved abnormal demand, or only in cases where the 1*s.* 6*d.* capitation and the additional 6*d.* have been exhausted? (5) the employment of assistants; and (6) the amount of service required in return for the sanatorium 6*d.*—have drugs to be paid for out of this 6*d.*, or out of the 9*d.* remaining after the 6*d.* has been deducted from the total 1*s.* 3*d.* provided for sanatorium benefit?

The Reply of the Chancellor of the Exchequer.

Mr. LLOYD GEORGE replied, through Mr. H. P. HAMILTON, as follows to the detailed questions set out under the above headings:—

(*1*) "*Increased Services to be Required from Doctors.*"

(1) The Government fully recognise that the professional instincts of the majority of medical practitioners will lead them, without further stimulus, to do all that can reasonably be expected of them in the interests of their patients. Since, however, every registered practitioner has a statutory right to take part in the service under the Act, some safeguards must be adopted in respect of those (doubtless few in proportion to the total) who would not of themselves reach the standard required.

As regards methods of securing this object, reliance will be placed primarily on the coöperation of the profession itself, acting particularly through the local medical committees, and before any definite decisions as to machinery are arrived at the Commissioners hope that they will have the advantage of conferring with representatives of the profession. In the meantime, while it is undesirable, pending such conferences, to attempt to indicate precisely what measures will be adopted, I am directed to state that as regards the inspection, which, as indicated in your letter, will be necessary, medical inspectors will be employed.

In the matter of modern methods of exact diagnosis, practitioners on the panel will not be expected themselves to undertake work requiring skill and experience beyond that which the ordinary general practitioner can properly be expected to possess. In this respect the position is the same as in regard to treatment. In cases where methods of investigation beyond the ordinary scope of a general practitioner is necessary, it will not fall within the duty of a practitioner under the terms of his agreement, as set out in the first and second paragraphs in the First Schedule to the Regulations, himself to carry out the investigation, but to advise the patient as to the steps which he should take. The practitioner will be expected to avail himself of all such facilities, in the shape of expert assistance in investigations useful for proper diagnosis and treatment, as are placed at his disposal. In so far as such facilities do not at present exist, it is the hope of the Government that means will be found for encouraging their development and organisation in due course.

Records.—The precise form of records has not yet been determined, and the Commissioners will be glad to have the advantage of the assistance of representatives of the profession in deciding how they can be kept in such a form as will entail a minimum of trouble upon the medical practitioner, while furnishing information of value as to the incidence of disease and aiding in the advancement of medical knowledge. In the meantime I am to say that it seems probable that the object might be attained by the keeping of day books in a special form, in which the entries relating to a month's attendance on one patient would be contained in a single line at one opening of the book. These books would be supplied to all practitioners on the panel free of cost.

The particulars which it is considered can usefully be given are name of patient, address of society, and number record of visits and other attendances for the month (kept on a system similar to that of the visiting lists used by many practitioners), age, sex, and nature of illness. It is considered that, on grounds of professional secrecy, these records should be confidential and open to inspection to only those officers within whose specific duties it fell to deal with them.

(*2*) "*Definition of Medical Benefit.*"

With reference to the paragraphs in your letter headed "Definition of Medical Benefit," I am to state that, so far as an indication of the range of services expected of practitioners on the panel can be given in Regulations, it is contained in the first and second paragraphs of the First Schedule, which is intended to serve as the basis for the agreement between the practitioner and the Insurance Committee. These paragraphs have been carefully framed in order to give effect to the requirements of the Act. On practical as well as on technical grounds it appears to the Commissioners preferable that the duties should be defined in such general terms rather than by an attempt to enumerate specific duties which a practitioner would or would not be required to discharge. This, indeed, was the advice which the Commissioners received when this subject was discussed at a meeting of the medical members of the Advisory Committee at which those nominated by the British Medical Association were present, and it was understood that they concurred in recommending the course which has subsequently been adopted in framing the Regulations.

As to the question of consultation with specialists, the passages to which you allude in the Chancellor's speech on June 1st, 1911, and in his speech on Oct. 23rd, 1912, respectively, do not relate to the same matters. Confusion has probably arisen through omission to recognise the distinction between two different kinds of "extra" services—those, namely, which fall within the scope of medical benefit and those which do not. The latter group includes the "specialist services," to which the Chancellor alluded on Oct. 23rd, which, not being rendered by practitioners on the panel, lie outside the scope of the arrangements made by the Insurance Committees. On the other hand, as regards services of a special character which can be rendered by the general practitioner—such, for example, as the performance of certain operations or the administration of an anæsthetic—it has been suggested that the profession would prefer that these should not be covered by any flat capitation rates, but should be paid for by fees over and above such rates. Such a system of remuneration can be provided under the model methods B, C, D, and E, contained in the second part of the First Schedule to the Regulations; and the amount now made available for medical remuneration is calculated on such a basis as to allow sufficient margin for payment of all necessary fees of this character, after providing a reasonable capitation payment to cover visits and consultations which are not of a special character.

(*3*) "*Amount of Remuneration: Mileage.*"

On the subjects of "amount of remuneration" and "mileage" I am to inform you that (as has already been stated in reply to a question in the House of Commons) Regulation 23 is now being redrafted by the Insurance Commissioners in order to give effect to the decisions of the Government, announced by the Chancellor of the Exchequer on Oct. 23rd, and the necessary consequential changes will be made in other Regulations. The result of these changes, taken with the conditions of the new grant, will be to secure that (including the 6d. derived from the Sanatorium Benefit Fund for domiciliary treatment of tuberculous insured persons) a sum equivalent to 7*s.* per head of insured persons in Great Britain will be available for the remuneration of medical practitioners on the panel throughout Great Britain, and will be applied solely to medical remuneration, without deductions for drugs, administrative expenses, or any other purpose. On the other hand, *the method of distribution* of this amount among the practitioners throughout Great Britain who attend insured persons is still open for consideration, and the decision will not be finally arrived at without affording sufficient opportunity to the profession of stating its wishes on this point. Most careful consideration will be given to proposals for this

purpose which appear to command the general approval of the profession. It would, for instance, be possible for the Government specifically to allocate a portion of the funds for the purpose of mileage, as suggested by the Council of the British Medical Association in your letter. If it is made clear to the Government that such a course would have the approval of practitioners throughout the kingdom, not only in the rural but also in the urban districts, there would be no difficulty in carrying it into effect. As to the method of payment of any amounts appropriated, either centrally or locally, for mileage, the Commissioners think such payments should take the form of an annual grant to the practitioner concerned, calculated on the basis of the number of patients on his list who reside outside a certain radius, and of the distance of each such patient from the residence of the nearest available doctor. This method appears to the Commissioners to be more equitable, as between the practitioners specially concerned and the rest of the profession, than the payment of a special fee in respect of each visit.

(4) "Abnormal Drug Fund."

In reply to the paragraph of your letter headed "Abnormal Drug Fund," the intention is that the fund in question shall be available to prevent the 6d. for drugs being drawn upon in cases in which, and in so far as the extra demand for drugs is clearly due to abnormal sickness. The fund, that is to say, must be available, not only in cases where that 6d. has been exhausted in the provision of drugs, but also in cases in which it has not been so exhausted.

(5) "Employment of Assistants."

On the subject of "Employment of Assistants," I am to state that the subject of the limitations, if any, to be placed on the employment of assistants was fully discussed by the medical members of the Advisory Committee in conference with the Commissioners on May 31st, 1912, and it was clear that while all present recognised that the employment, within proper limits, of assistants might in many cases be advantageous to the patient, safeguards were necessary against the excessive substitution of the service of assistants for the personal service that the practitioners on the panel had undertaken to give. It appeared, indeed, to be the general opinion of the medical members of the Committee (including those nominated by the Association) that the excessive use of assistants by practitioners was not only unjust to patients, but was also unfair to other practitioners, and undesirable in the general interest of the medical profession. It is considered that the Regulations, as at present drawn, operating in conjunction with the free choice of doctor by patient, will afford proper latitude in this matter, while tending to check the abuses to which reference has been made.

(6) "Treatment of Tuberculosis."

In reply to your inquiry on the subject of the capitation payment of 6d., in respect of domiciliary treatment of tuberculous insured persons by practitioners who are also giving attendance under the head of medical benefit, I am to state that the amount and kind of attendance will be such as in the best interests of the patient can be given by the practitioner himself. The 6d. from the Sanatorium Benefit Fund will be added to the funds available for the provision of medical attendance and treatment by practitioners on the panel. The 6d. is solely for the remuneration of the doctor, and no deduction will be made from it for provision of drugs or any other purpose.

The following has been issued as a statement on the question of medical benefit under the Insurance Act by the medical members of the Advisory Committee, who, while disclaiming any intention of giving advice, consider that it is vital that all the facts should be before the medical profession, and that the final judgment should be made after a calm and deliberate consideration of their relative importance.

THE GOVERNMENT'S OFFER TO THE MEDICAL PROFESSION.

In making its decision as to whether it will work the Insurance Act or not, the profession has to consider a number of points. Some are of subsidiary importance, but three are vital. These are:—

1. The amount to be paid per head of the insured class for medical and sanatorium benefits and the amount of money available from maternity benefit.
2. The probable action of the Government in the event of the refusal of the profession to work the Act.
3. The provisional character of the Regulations.

The Chancellor of the Exchequer has announced that the Government are now willing to find a further sum of £1,850,000 to meet the cost of medical benefit. With the money already available this is equivalent to something over 8*s.* 6*d.* per insured person. In addition, remuneration for the *home treatment* of tuberculous patients has been provided for by setting aside, out of the funds available for sanatorium benefit, the sum of 6*d.* per head of insured persons, making 9*s.* in all.

It is difficult to estimate maternity benefit upon a capitation basis. The wife of any insured worker will receive 30*s.* at her confinement. If she is an insured worker she will receive in addition 7*s.* 6*d.* a week sick pay for four weeks. Since it is the workers who are insured, the poorer the woman the more probable is it that she will receive £3 instead of 30*s.* at this time. Further, under the Regulations relating to maternity benefit the woman must be attended either by a registered medical man or by a qualified midwife, and in cases of difficulty where a midwife sends for a medical practitioner the fee of the practitioner is to be paid out of the maternity benefit. The total sum available for maternity benefit amounts to £1,412,000.

According to the Regulations recently issued, the money to be paid for medical benefit and the money to be paid for drugs was to come out of the same fund. Payment for drugs was to have had preference to payment for medical attendance. One of the chief difficulties of contract practice hitherto has been the tendency of the public to demand medicines rather than advice for the treatment of disease. For the first time in the history of this country an attempt has been made by the Government of the day to deal on an organised plan with the treatment of disease. It is to the real interests of medicine that from the outset some effective check should be placed upon the indiscriminate use of drugs. We have pointed out to the Commissioners that whilst we agree with this contention, and with the fact that the doctor must ultimately act as the chief check on needless drug-taking, yet it is not fair either to the public or to the profession that the doctor's remuneration should be involved in this question to the above extent.

To meet this objection it has now been arranged that the doctor shall be certain of obtaining a minimum of 7*s.* from medical and sanatorium benefit per head of the insured. A minimum of 1*s.* 6*d.* is to be allocated for drugs and appliances. This leaves a further 6*d.* available from the 9*s.* If the cost of drugs and appliances, apart from special causes such as epidemics, is above 1*s.* 6*d.* per head, it will be a first charge on the Contingent Fund formed from this 6*d.* If the cost of drugs, &c., is not above 1*s.* 6*d.*, the remaining 6*d.* will be paid to the doctor. If the Contingent Fund is partly encroached upon, the remainder will be paid to the doctor. An "additional Drug Fund," over and above the 9*s.* referred to, is to be provided by the Treasury to meet special charges for drugs in times of epidemics.

The sum available for the cost of medical attendance under medical and sanatorium benefits will therefore be dealt with as follows:—

	s.	*d.*
Minimum fee for the doctor's professional services	6	6
Allowance to meet average cost of drugs, &c.	1	6
Contingent fund that will go to the doctor so far as it is not drawn upon for drugs	0	6
Total medical benefit	8	6
Add an allowance to the doctor for the home treatment of insured persons under the sanatorium benefit	0	6
Total benefit	9	0

Each medical man on the panel will receive £350 for every 1000 insured persons on his list, in addition to what he may obtain from maternity benefit. He may also reckon on obtaining a certain amount in an average year from the contingent fund of 6*d.* per insured person set aside to meet extra cost in the matter of drugs. The cost of the drugs used will be largely under his control, and he will be in a position to do justice to his patients in this matter without making inroads on the 7*s.* set aside for the payment of professional services.

The second vital question to which reference has been made is the Chancellor's statement with regard to the action the Government intend to take in the event of the rejection by the profession of the terms offered. The Government is pledged to work the Act. If the profession refuses to coöperate on the lines proposed, the Government must carry out the Act by some alternative arrangement. One course of action would have been to hand the available money to the Approved Societies. Owing to the almost unanimous vote of the lay members of the Advisory Committee against it, this proposal has been definitely dropped by the Government. The remaining alternative is the establishment of a State Service.

We must now accept it as being the fixed intention of the Government to use the money and administrative advantages at its command for the purpose of fulfilling its definite pledge to twelve millions or more of insured persons. The proceedings of the Joint Advisory Committee revealed a body of opinion favourable to the scheme of a State Service outlined in the statement of the Chancellor on Oct. 23rd. It has, however, been foreseen since the time of the debates on the Insurance Bill that the sudden establishment of a State Service would inflict great hardship on some thousands of medical practitioners. The Government accordingly decided that the scheme of the Act should, in the first place, be offered to the profession. Before the profession decides to refuse to work the Act it should consider whether it is in a position to render the establishment of an efficient State Service impossible.

The *provisional* character of the Regulations is another cardinal factor. At present neither we nor the Government are able to claim that our arguments are based on facts, the truth of which is beyond question. We are both dealing with hypotheses and with deductions which, to one side or the other, appear to be fairly drawn. If the Insurance Act is worked for a short term of years, absolutely reliable data can be obtained. We have the definite assurance that the Government pledges itself to reconsider the whole question in all its aspects at the end of three years in the light of ascertained facts.

In addition to these vital issues there are certain questions which are important but nevertheless do not touch professional interests so closely. One of the most important of these is the question of the income limit. The profession has stipulated that this shall be £2 a week. It is obvious that a uniform income limit for the whole country is impossible in view of the differences which obtain both in the customs, as well as in the rate of wages, and in the cost of living in different localities. It is for the profession to consider how far this point has been met by its reference under the Act to the Local Insurance Committees. The Board of Trade Statistics of Wages appear to show that the number of the insured persons whose earnings amount to more than £2 a week for the whole year is not more than 5 per cent of the insured. It has also been pointed out that those whose earnings average more than £2 per week are men, as a rule, who are in the best form of employment and in such a state of health that they are fairly continuously at work.

A further objection has been raised that it will still be possible for a man who is insured now, and who by his success in the course of the next few years reaches a more considerable income, to continue to claim medical attendance under the provisions of the Act. No regulation so far has been made to deal with this question, but no case of this kind can arise until January, 1917. Before that date is reached the Government is pledged to reconsider the whole situation.

In conclusion, we ask you to consider whether, in view of the Government's offer, and in view of their pledge to reconsider the whole question in the light of the facts gathered together during the next three years, the profession would be wise to refuse to work the Act.

A MEETING OF PRACTITIONERS FAVOURABLE TO THE PROVISIONS FOR MEDICAL BENEFIT.

The following resolutions were passed at a meeting of practitioners at the Westminster Palace Hotel on Nov. 5th. The chair was taken by Dr. J. H. KEAY.

Proposed by Dr. BRACKENBURY and seconded by Dr. COWIE:—

1. That this meeting of medical practitioners in London is of opinion that the Provisional Regulations for Medical Benefit, the Model Rules, and the recent statement of the Chancellor of the Exchequer, while not securing to the profession all they might reasonably demand, afford a basis upon which a satisfactory temporary arrangement to coöperate in administering medical benefit might be arrived at; urges their fellow practitioners at the forthcoming divisional meetings to seek to secure such resolutions as will enable the Representative Meeting to give full powers to the Council of the British Medical Association or its State Sickness Insurance Committee to re-open and complete negotiations to that end.

Proposed by Dr. BOON and seconded by Dr. SALTER—

2. That this meeting of general practitioners thanks the medical members of the Advisory Committee for their services in securing modifications of the Regulations and the additional Treasury grant in respect of remuneration, whereby a basis for a satisfactory settlement with regard to administration of medical benefit has been obtained.

170 practitioners were present.

Medical News.

UNIVERSITY OF OXFORD.—The following degrees have been conferred:—

D.M.—A. R. Wilson.
B.M., B.Ch.—J. L. Birley.

Mr. H. C. Bazett, B.M., B.Ch., has been elected to a medical Fellowship at Magdalen College.—The Regius Professor of Medicine announces that the opening of the new Pharmacological Laboratory will take place at the Museum to-day (Saturday, Nov. 9th) at 3.30 P.M. An address will be given by the Reader, Dr. Gunn, on the New Pharmacology.

HARVEIAN SOCIETY OF LONDON.—The annual dinner of this society will be held at the Hotel Great Central, Marylebone-road, on Thursday next, Nov. 14th, at 7 for 7.30 P.M. The chair will be taken by the President, Dr. H. J. Macevoy. Tickets (*8s. 6d.*, exclusive of wine) and all information can be obtained from Dr. G. de B. Turtle, 81, Cambridge-terrace, Hyde Park, W.

CHARING CROSS HOSPITAL.—The annual dinner of past and present students of the hospital was held in the Adelaide Hall, Gatti's Restaurant, on Oct. 31st, under the chairmanship of Dr. F. W. Mott. The guest of the evening was Professor Simon Flexner, who had delivered the Huxley lecture (which appears in this issue of THE LANCET) earlier in the same day. There was a large attendance, including many of the staff and students of the hospital, and a very successful evening was spent. The chairman, in proposing the toast of the hospital and medical school, referred appreciatively to Huxley, Livingstone, and Joseph Fayrer, three great names always associated with Charing Cross Hospital. In connexion with the new public health and bacteriological laboratories, opened that day and taken over by the University of London, he warmly praised Dr. William Hunter for his energy and initiative in carrying the scheme through, and he laid stress on the importance of the "cerebral equipment" of a laboratory. Dr. Hunter, the dean of the school, in his eloquent reply showed how the hospital as it neared its 100th year was "going strong all round." Owing to the foresight of their founder the medical school from the beginning had been an integral part of the hospital. The toast of "The Guests" was in the able hands of Dr. J. Galloway, who remarked that they were dining almost on the site of the ancient Hermitage of St. Katherine for wandering Welshmen. How gladly, he said, would the profession now see a certain distinguished Welshman under ecclesiastical restraint and hospitality. Professor Flexner, in reply, paid a tribute to William Welch, his teacher and predecessor in the Huxley Lectureship. He said that Huxley was an international force, whose influence went on; and he showed, in the course of a speech full of quiet humour, how lively and intimate was the connexion between medicine in England and America. Principal Headlam also responded for the guests. He deprecated the concentration of all clinical teaching in two or three large hospitals. It was important, he said, amidst applause, that the tradition of each of the smaller schools should be preserved. Mr. Stanley Boyd had a grateful task in proposing the health of the chairman, and this toast and Dr. Mott's reply were greeted with enthusiasm. The cordiality of the relation between the school and staff and the governing body of the hospital was remarked upon by the chairman and by several other speakers during the evening.

THE Chelsea Hospital for Women has received £100 from Mr. Basil C. Fothergill towards the rebuilding of the hospital and its nurses' home.

Dr. R. D. O'Leary, medical superintendent of the Dreadnought Hospital, has gone out under the auspices of the Red Cross Society to the Balkans. On Oct. 30th he was entertained at Frascati's by his hospital colleagues.

WORTHING HOSPITAL.—The debt of just over £1400 in connexion with the new out-patients' department at Worthing Hospital has been liquidated by a legacy of £2000, free from duty, from the estate of Mr. Alfred Cortis, the first mayor of the borough.

THE ROYAL SANITARY INSTITUTE.—A meeting of this institute will be held at 90, Buckingham Palace-road, on Tuesday next, at 8 P.M., when a discussion will take place on the Report of the Departmental Committee on Intercepting Traps and House Drains, to be opened by Mr. H. P. Boulnois. Amongst those who hope to take part in the discussion are Dr. Philip Boobbyer, Dr. William Butler, Professor H. R. Kenwood, Dr. Louis C. Parkes, and Dr. H. Scurfield. The chair will be taken by Sir Maurice Fitzmaurice.

DR. ARTHUR DOUGLAS: AN APPEAL.—The Earl of Denbigh has forwarded us an appeal on behalf of Dr. Arthur Douglas, who in consequence of severe injuries, the result of an X ray burn, is incapacitated from earning a livelihood. Dr. Arthur Douglas, after being in practice in Natal, served throughout the war, and in 1905, while in Government employ, received the injuries from which he is now suffering. There being no regulations under which he could be pensioned, a grant of £200 was obtained from the Royal Bounty Fund, but this has been swallowed up in providing suitable treatment and in other ways. Lord Denbigh points out that Dr. Douglas, who is 50 years of age, is now entirely without means and faced with want. To purchase an annuity of £150 would cost about £2200. Contributions may be sent to Lord Denbigh, at 5, John-street, Mayfair, or direct to Messrs. Cocks, Biddulph, and Co., bankers, 43, Charing Cross, S.W., marked, "Douglas Fund." The Marquis of Tullibardine, M.P., commanding the Scottish Horse, with whom Dr. Douglas served for a considerable period of the war, will also be pleased to receive any contributions at 84, Eaton-place, S.W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Mental Deficiency Bill.

VERY important modifications in the Mental Deficiency Bill are being proposed by the Government. Clause 17, which classifies persons subject to be dealt with as defectives, is to be narrowed down so as, in the words of the Home Secretary, to affect "persons who have already come into contact with the law." So far as can be gathered from the preliminary statement which Mr. MCKENNA made to the Standing Committee of the House of Commons on Thursday, Oct. 31st, the defectives who will be treated under the Bill are those (1) who have already as criminals come within the cognisance of the law; or (2) who have to be treated as persons neglected or ill-treated; or (3) who have become chargeable to the State; or (4) who are already being dealt with by the local education authorities in any particular way. The provision, which includes in the scope of the Bill defectives "in whose case it is desirable in the interests of the community that they should be deprived of the opportunity of procreating children" will disappear. However, feeble-minded women in receipt of poor relief who give birth to illegitimate children will be dealt with as defectives under the Bill. The changes which the Home Secretary has foreshadowed afford satisfaction to the group of Members who have professed antagonism towards the "eugenic" proposals of the Bill. Hitherto its progress in the Standing Committee has been slow. Mr. MCKENNA has recently stated that the intention of the Government is to press it forward in this session of Parliament, and the reframing of Clause 17 may facilitate its advancement.

As the preliminary discussion on Clause 17, during which Mr. MCKENNA announced the intentions of the Government to amend it drastically, is of importance, it is desirable to record it at some length.

After the Standing Committee had recast Clause 2 and fixed the composition of the new Board of Control, it passed immediately to the consideration of Clause 17. The first subsection is in the following terms:—

"Save as expressly provided by this Act the following persons and no others shall be subject to be dealt with by this Act, that is to say, persons who are defectives, and (*a*) who are found wandering about, neglected or cruelly treated; (*b*) who are charged with the commission of any offence or are undergoing imprisonment, or penal servitude, or detention in a place of detention, or a reformatory, or industrial school, or an inebriate reformatory; (*c*) who are habitual drunkards within the meaning of the Inebriates Acts, 1879 to 1900; (*d*) in whose case being children discharged on attaining the age of 16 from a special school or class established under the Elementary Education (Defective and Epileptic Children) Act, 1899, such notice has been given by the local education authority as is hereinafter mentioned; (*e*) in whose case it is desirable in the interests of the community that they should be deprived of the opportunity of procreating children; (*f*) in whose case such other circumstances exist as may be specified in any order made by the Secretary of State, as being circumstances which make it desirable that they should be subject to be dealt with under this Act."

Mr. MCKENNA, at the outset, made a general statement on Clause 17. He said that the clause had produced controversy, and various modifications had been suggested in amendments, which had been put down. The Government were ready to introduce considerable modification into the clause. Their purpose was, broadly speaking, as follows. They proposed that no person should be brought into the operation of this Bill merely because such person was feeble-minded. It was recognised that the condition of feeble-mindedness was one which might not of itself call for practical interference by the law. The intention was that no feeble-minded person should be dealt with compulsorily unless such person for some reason or another had already come into contact with the law, and when being dealt with by the law for some other reason was found in fact by judicial authority to be feeble-minded, and then was adjudged to be more properly dealt with as a feeble-minded person than to be dealt with by some legal authority. If the amendments were gone through it would be seen that it was now proposed that every person whom it was proposed to treat as a feeble-minded person under the Bill would either have to be dealt with (1) already under the law as a criminal; or (2) as a person neglected or ill treated; or (3) as a person who had become chargeable to the State; or (4) as a person who was already being dealt with by the local education authorities in any particular way. He was prepared to consider and accept any proposals which might subsequently be shown to be necessary in order to make the Bill conform to these general principles. He hoped that this statement would have the effect of clearing the atmosphere. In the Committee and outside it many things had been said about this Bill which were not justifiable. Amongst other things it was alleged that the Bill would be used in order to lock up feeble-minded persons whose relatives or enemies or well-meaning but foolish friends thought ought to be locked up without giving them any possibility of redress. Under the definitions as he trusted they would ultimately emerge from the Committee such a charge could not be brought with any propriety against this Bill, because no persons could be dealt with under it who had not been dealt with by the existing law. In working out the various amendments which the Government had put down to Clause 17 he trusted that he would be able to satisfy the most zealous supporters of the rights of individual liberty that the Government were doing nothing in this Bill which would endanger the liberty of the subjects.

Mr. WEDGWOOD said that the statement of the Home Secretary was important, but the right honourable gentleman would see that Section 20 of the Bill would allow any relative or friend to present the petition against a person as a mentally defective person and might have him sent to incarceration, although that person had not come within the meaning of the law.

Mr. MCKENNA: Subsection 20 is only operative subject to the provisions of Section 17.

Mr. WEDGWOOD said that he was glad that the change had been made. If the Bill was only going to deal with defectives who had come into contact with the law Clause 20 became unnecessary.

Mr. HARRIS asked whether it was a fact that the Bill would allow persons who were feeble-minded and had come into contact with the law to be detained as defectives although they had a good home to go to.

Mr. MCKENNA said that there were amendments to Clause 17 which would meet the point of the honourable Member. The decision of the judicial authority would be optional.

Mr. DICKINSON said that under the changes sketched by the Home Secretary there were persons who might with advantage be detained in a home but who would escape detention. He regretted this. He believed that the solution was to allow the powers of detention to be applied generally, but to take care that they could not be abused. He believed that the Bill might be so narrowed down that it would not be efficacious.

Sir NORVAL HELME remarked that he heard with regret that this Bill was to be restricted so as to deal only with those feeble-minded persons who had come within the clutches of the law.

Mr. ACLAND ALLEN said that he had had some years' experience in regard to special schools in London, and he knew the very great field there was for dealing with girls who were mentally and morally defective. The difficulty with regard to them was that it was perfectly certain that the local authority would lose hold of them at the age of 16, and that these girls unless they were looked after would drift into bad courses. This had happened over and over again. It seemed to him that this clause, for which he had hoped keenly, had been narrowed down very considerably, and unless this clause was kept in an efficacious form the Bill, in his opinion, would be almost worthless.

Mr. MCKENNA said that he had stated expressly that the clause would include persons who had been dealt with by a local authority such as a local education authority. His honourable friend must not understand that these would be excluded. It was his intention to move the deletion of provision (*e*) dealing with cases where it was desirable in the interests of the community that defectives should be deprived of the opportunity of procreating children, and of provision (*f*) which allowed the Secretary of State to specify other circumstances which made it desirable that defectives should be subject to be dealt with under the Act. However, he would move an amendment to include in the clause defectives "who being women are seeking, or in receipt of, poor relief when pregnant of an illegitimate child." He would also accept an amendment to include in the provisions of the clause defectives "in whose cases such other circumstances exist as may be specified in regulations to be made by the Board of Control as being circumstances which make such persons injurious or dangerous to themselves or to the community."

The Committee afterwards discussed some minor amendments.

Very little progress was made with the discussion of Clause 17 on Tuesday, Nov. 5th. However, in the course of the discussion Mr. MCKENNA foreshadowed a proposal which the Government may make on Clause 24 to transfer to homes for defectives defective children other than those who were being dealt with under the Defective and Epileptic Act. The Government would also propose to give power to the local authority to transfer from their special schools such children as could not properly be dealt with in those schools. He also stated that the Government desired to make the Act relating to special schools compulsory. The effect of these changes would be that the local education authorities would be able to discriminate between children who ought properly to be educated in these schools and the children unsuited for such schools. The latter pupils would be transferred to defective homes.

Patent Medicines Committee.

The last of the medical evidence which for the present will be called before the Select Committee of the House of Commons which is dealing with the present state of the law in relation to patent medicines was given on Wednesday, Oct. 30th, by Professor W. E. DIXON, M.D., of Cambridge, and professor of materia medica at King's College. Sir HENRY NORMAN was in the chair.

Professor DIXON emphasised in his evidence the harm caused to the health of the nation by the use of certain proprietary remedies. With regard to many of these remedies no attempt was made to distinguish between the various kinds of illnesses for which they might be recommended by their vendors. Fraudulent claims were often made for proprietary remedies, and he thought that in cases where definite curative properties were claimed for a preparation the vendor should be called upon to substantiate the claim which he put forward. In his opinion firms who were able through scientific research to discover valuable medicinal processes should be able to patent a compound for the usual period, but after that time they should cease to have any proprietary right in the fancy name which they attached to it. He was of opinion that all the active ingredients of the so-called secret remedies should be stated on the label, and if the law as it existed were put into operation the evil complained of might be very considerably mitigated. The Liverpool corporation had taken action under the Merchandise Marks Act, and he thought that the application of this statute should be made compulsory.

In reply to Dr. CHAPPLE, Professor DIXON said that he was definitely of opinion that there had been no new drugs introduced into medicine within the last 30 years except through the scientific laboratory.

Mr. H. LAWSON: Do you condemn all proprietary medicines without respect to the claims which they make?

Professor DIXON said that he did not. There were perfectly legitimate and genuine preparations in connexion with which the proprietors ought to have the benefit of the skill displayed in their production.

Mr. LAWSON: But without respect to extravagant and fraudulent claims do you condemn all secret remedies as such?

Professor DIXON: I do.

Mr. O'GRADY: There are about 14,000,000 people insured under the Insurance Act. Are not these the people who usually buy secret remedies?

Professor DIXON: I do not agree with this. The clergy are as bad as anybody. I think that in future insured persons will prefer to get a prescription from a medical man rather than buy secret remedies.

Mr. GLYN-JONES: Do you think it would be useful for the public to know more about drugs, and that there should be no secrecy?

Professor DIXON: Yes.

An HONOURABLE MEMBER: Would you go so far as to say that doctors should write their prescriptions in English?

Professor DIXON: Yes, I think so.

The CHAIRMAN: Is the fact that doctors' prescriptions are still written in Latin a survival from an age when doctors sought the same secrecy for their prescriptions that patent medicine vendors seek to-day?

Professor DIXON: You are asking me a historical question. My answer would be that I do not know.

The Committee adjourned.

The Medical Profession and the Insurance Act.

Whilst the effect of the statement of the Chancellor of the Exchequer in regard to the remuneration to be offered to the medical profession is being carefully watched at Westminster, several questions have been answered in the House of Commons with a view to elucidating the proposals of Mr. LLOYD GEORGE. The replies given to Mr. LAURENCE HARDY and Mr. CHARLES BATHURST on Monday, Nov. 4th, are regarded as of some importance, as they deal with the conditions of medical service, diagnosis, and the question of mileage.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 30TH.

The Plague in India.

Mr. LEACH asked the Under Secretary of State for India whether he could state what steps the Government was taking to stamp out plague in India which last year caused 842,000 deaths, and which had during the last 16 years swept away 8,000,000 victims.—Mr. H. BAKER (on behalf of the Under Secretary) replied: The Plague Investigation Commission is continuing its valuable labours, and in the light of its discoveries and of past experience preventive and remedial measures are being steadily pursued. They include the destruction of rats, the provision of special hospitals and travelling dispensaries, preventive inoculation, the purification of plague-infected sites, and the general sanitary improvement of urban and rural areas. Plague mortality during the present year is much less than in the corresponding portion of 1911.

West African Medical Service.

Mr. MCCALLUM SCOTT asked the Secretary of State for the Colonies whether Great Britain alone amongst the West African colonising powers refused to accept fully qualified medical men in Government service on the ground of colour.—Mr. L. HARCOURT said in reply: I am not aware on what grounds my honourable friend suggests that other West African colonising powers do not refuse to appoint medical men of African descent; but he is under a misapprehension with regard to the British Colonial administrations in West Africa, two of which do employ medical men who are natives of the coast.

THURSDAY, OCT. 31ST.

Fatal Case of Anthrax.

In reply to Mr. JOWETT, Mr. MCKENNA (Secretary of State for the Home Department) said that he regretted to say that a fatal case of anthrax had occurred at Shipley. The case was an obscure one, and the reports which he had received stated that the regulations were being fully observed, and that additional precautions, such as the examination of fleeces for blood clots and the installation of exhaust apparatus for removing dust in card-grinding, were being adopted by the firm in question in order to minimise the danger of anthrax. The department was ready to revise the regulations as soon as it was clear what where the precautions which would secure greater safety. The main direction in which further progress was to be looked for was, so far as could be seen at present, some method of disinfection, and earlier in the year he arranged with the Anthrax Investigation Board to press forward experiments on this subject. He hoped that before long the Board might have important results to report.

Sanatorium Treatment of Dependents of Insured Persons.

Sir EDWARD BEAUCHAMP asked the Secretary to the Treasury whether the Insurance Committee of a county had power to extend sanatorium treatment to dependents of insured persons resident in the county; and whether any Insurance Committees had made the necessary arrangements for the treatment of such persons.—Mr. MASTERMAN answered: The reply to the first part of the question is in the affirmative. Some Insurance Committees have already made arrangements for treatment of dependents, and the Commissioners propose to issue a circular letter recommending that other Insurance Committees should consider the question of extending sanatorium benefit to the dependents of insured persons.

Captain GILMOUR asked the right honourable gentleman whether the Insurance Commissioners had made any regulations as to the terms under which patients would be admitted to sanatoria for treatment; and whether his attention had been drawn to the fact that in some cases the patient was required to provide an outfit of clothing to the value of £5.—Mr. MASTERMAN wrote in reply: No regulations have been made by the Insurance Commissioners as to the terms under which patients will be admitted to sanatoria for treatment. Such terms are primarily a matter for agreement between the Insurance Committee and the managers of the sanatorium, but the arrangements made require the approval of the Commissioners, and they would not approve of any agreement which would impose upon an insured person the liability mentioned in the question. I should be glad if the honourable and gallant Member would inform me of the case which he has in mind.

Sanatorium Benefit for Soldiers and Sailors.

In reply to Mr. ASTOR, Colonel SEELY (Secretary of State for War) said: Soldiers who develop tuberculosis are discharged from the army, and then become entitled to sanatorium benefit. The method by which treatment in sanatoria can best be ensured for them is at this moment being investigated.

Answering Mr. ASTOR, Mr. MACNAMARA wrote: There is no special sanatorium accommodation set apart for insured persons in His Majesty's navy. Patients are treated in the ordinary hospitals.

A Pure Bread Bill.

Mr. CHARLES BATHURST asked the President of the Local Government Board whether he proposed to introduce this session a Pure Bread Bill or otherwise to take any action in consequence of the reports made to his department 18 months ago by Drs. Hamill and Monier-Williams in reference to the bleaching and adulteration of flour.—Mr. BURNS furnished the following reply: A Bill is in preparation. It will be general in character and not confined to bread.

The Teeth and Pure Bread.

Mr. CHARLES BATHURST asked the President of the Local Government Board whether Dr. J. M. Hamill, or any other expert of his department, had investigated the effect both upon the soundness of the teeth and upon the nutritive value of bread of the removal of the ferments from flour in the process of roller milling; and, if not, whether such an investigation would be conducted prior to the introduction of legislation in reference to the adulteration and sophistication of flour and flour products.—Mr. BURNS wrote in reply: No experimental investigation into the matter referred to has been made on behalf of the Board. In view of the minuteness of the changes which take place in flour as the result of the action of ferments contained in it, I am advised that there would be great difficulties in making any satisfactory investigation by means at present available of the effect, if any, on nutrition generally or on the condition of the teeth by the action of ferments in flour. The matter is not one which calls for consideration in connexion with the question of adulteration and sophistication of flour and flour products.

MONDAY, NOV. 4TH.

Medical Service under the Insurance Act.

Mr. LAURENCE HARDY asked the Secretary to the Treasury whether, when he laid down as one of the conditions for the medical service in connexion with the National Insurance Act that the practitioners should in future resort to modern means of exact diagnosis, he intended to include under this head all the expenses of examination of blood, sputum, &c., and the cost of vaccine treatment, within the ordinary allowance granted to the medical profession; whether under the terms of medical appliances such articles as trusses and other appliances of a similar character were included and would they be paid for out of the extra 6d. allocated for unusual expenditure; and could he now state what was the authority which was to decide whether a medical man had, or had not had resort to the most modern means of diagnosis.—Mr. MASTERMAN furnished the following written reply: It is generally recognised, by none more than the medical profession, that the standard of contract practice up to the present has been on the whole far from satisfactory. Now that the State is providing a very substantial increase in the remuneration of the medical profession it is proposed that the standard should also be improved, and it is contemplated that in consideration of this increased remuneration the practitioner on the panel will provide medical treatment for the benefit of the insured persons to the same extent and on the same lines that he would for his patients in his ordinary private practice. Trusses are not included in the list of appliances which is scheduled to the Regulations, and therefore would not be paid for from the amount allowed for drugs and appliances. It will be for the Commissioners to decide whether a proper standard of diagnosis and treatment is being maintained by the medical practitioners who undertake the attendance and treatment of insured persons. It would not be practicable at present to foreshadow in detail the methods which the Commissioners may from time to time find it advisable to adopt in order to satisfy themselves in this respect. I may say, however, broadly speaking, that it is intended to rely at the outset to a great extent on the coöperation of the local medical committees and the medical profession generally to secure the object in view.

Mileage Allowances under the Insurance Act.

Mr. CHARLES BATHURST asked the Chancellor of the Exchequer whether, in the revised system of payment of the doctors for their services under the National Insurance Act, any difference would be made in the mileage allowance for urban and country practitioners respectively.—Mr. LLOYD GEORGE wrote in reply: No part of the new grant which Parliament will be asked to make is specifically ear-marked for mileage, but this does not prevent an arrangement for this purpose being made. The distribution of the total sum to be provided for medical remuneration, and the assignment of special portions to special services, is largely a matter for the medical profession, and any proposals which appear to command the general support of the profession will receive careful consideration.

Sanatorium Treatment for Reading Patients.

Mr. FLEMING asked the Secretary to the Treasury whether his attention had been called to the lack of accommodation in existing sanatoria at the disposal of the Reading Insurance Committee, as a result of which, out of six cases certified as suffering from tuberculosis requiring treatment, admission had only been obtained for one; and whether he was prepared to give effect to the desire of the committee that the Insurance Act should be so amended as to permit of sanatoria provided by Poor-law authorities being used for the treatment of insured persons until such time as sufficient accommodation was available elsewhere.—Mr. MASTERMAN wrote in reply: My attention has been called to a resolution passed by the Reading Insurance Committee with reference to existing accommodation for cases of tuberculosis, and I understand that the Insurance Commissioners have supplied the committee with a list of approved sanatoria to which insured persons suffering from tuberculosis may be admitted. The complete separation of Poor-law institutions from sanatorium treatment under the Act was a principle definitely embodied in the Bill in its passage through this House, and I have no reason to believe that the House has any desire to reverse that decision.

The Sanatorium Grant for Londonderry.

Mr. HUGH BARRIE asked the Chief Secretary to the Lord Lieutenant of Ireland what was the share of the county of Londonderry, on a population basis, of the £145,000 given to Ireland for sanatoria purposes, and what would be its proportion of the sum remaining since the grant of £25,000 was made to the Women's Health Association for the erection of sanatoria at Peamount, county Dublin.—Mr. BIRRELL answered: If the whole £145,000 had been distributable amongst the county areas in proportion to population the share of the county of Londonderry would have been approximately £3300. The share of the

county in the sum of £120,000 which is available for immediate distribution on population basis is £2729. As regards the balance of £25,000 I would refer the honourable Member to a previous reply on this subject

Lead Poisoning in the Ceramic Industry.

Mr. HILLS asked the Secretary of State for the Home Department whether he had received the resolutions of the international conference at Zürich relating to lead poisoning in the ceramic industry; whether those resolutions recommended the conclusion of an international convention restricting the use of lead; and what action the Government intended to take.—Mr. MCKENNA replied: I have received a copy of the resolution adopted by the International Association for Labour Legislation at their recent conference, which is to the effect that the branches of the association in different countries be asked to prepare reports with a view to the conclusion of a convention. The actual conclusion of a convention at the present time is not recommended, and it would be premature to state what action the Government intends to take in the event of such a recommendation being made.

TUESDAY, NOV. 5TH.

Treatment of Tuberculous Patients in the Metropolis.

Mr. TOUCHE asked the Secretary to the Treasury whether he was aware that according to the information available at the Local Government Board over 2300 persons of 16 years of age and upwards, and over 750 under 16 years of age, suffering from tuberculosis, were being treated in the Poor-law infirmaries and Metropolitan Asylums Board's institutions, many of whom presumably would be entitled, under the National Insurance Act, to sanatoria benefits; that the cost of the treatment of these patients involved a very large expenditure which was at present a charge upon the poor-rates of the metropolis; and could he say what provision out of the National Health Insurance Funds it was intended to make for these cases.—Mr. MASTERMAN replied: The National Health Insurance Fund can only be charged with the cost of treating insured persons, but the National Insurance Act and the Finance Act, 1911, have made available a sum of £1,500,000 to aid the provision of sanatoria and other institutions in which both insured and non-insured persons may receive treatment.

WEDNESDAY, NOV. 6TH.

The Case of Rural Practitioners.

Mr. CHARLES BATHURST asked the Secretary to the Treasury whether he realised that the cost incurred by a medical practitioner in visiting his patients over a wide agricultural area with a scattered rural population, such as Salisbury Plain or the Cotswold Hills, far exceeded that incurred by an urban practitioner; and whether, under such circumstances, he would more nearly equalise the doctors' remuneration for their services under the National Insurance Act by granting a special mileage allowance to the former.—Mr. MASTERMAN replied: There is no reason why the total sum to be provided for medical remuneration should not be distributed amongst the doctors with the cooperation of the medical profession in such a manner as to equalise the remuneration for the services of town and country practitioners.

BOOKS, ETC., RECEIVED.

AULDE, JOHN, M.D., Philadelphia, U.S.A.

The Chemic Problem in Nutrition (Magnesium Infiltration). A Sketch of the Causative Factors in Disorders of Nutrition as Related to Diseases of the Nervous System. By John Aulde, M.D., formerly Assistant Physician, Out-patient Department, Jefferson Medical College Hospital. Price $3.00, post paid.

BALE (JOHN), SONS, AND DANIELSSON, LIMITED, London.

A Handbook on Surgery. Intended for Dental and Junior Medical Students. By Arthur S. Underwood, M.R.C.S. Eng., L.D.S. Eng., late Examiner, Royal College of Surgeons of England, &c., and Bayford Underwood, M.B., B.S. Lond., L.R.C.P., M.R.C.S. Eng. Price 3s. 6d. net.

CAMBRIDGE UNIVERSITY PRESS (C. F. CLAY, Manager), Fetter-lane, London, E.C.

The Psychology of Insanity. By Bernard Hart, M.D. Lond., Lecturer in Psychiatry, University College Hospital Medical School; Medical Superintendent, Northumberland House Asylum. Price 1s. net.

House-Flies and How they Spread Disease. By C. G. Hewitt, D.Sc., Dominion Entomologist, Ottawa, Canada. Price 1s. net.

Brewing. By A. Chaston Chapman, President of the Institute of Brewing, Fellow of the Institute of Chemistry of Great Britain and Ireland, Fellow of the Chemical Society. Price 1s. net.

GALE AND POLDEN, LIMITED, 2, Amen-corner, Paternoster-row, London, E.C., and at Wellington Works, Aldershot.

Guide to Promotion for Non-Commissioned Officers (Corporal to Staff-Sergeant) and Men of the Royal Army Medical Corps. With Appendix for Young N.C.O.'s on Clerical and Other Duties in a Military Hospital. Compiled by Captain S. T. Beggs, M.B., M.D., Royal Army Medical Corps (Reserve of Officers). Third edition. Price 3s. 6d. net.

GILL, GEORGE, AND SONS, LIMITED, 13, Warwick-lane, London, E.C.

Home Nursing Manual. With Chapters on Personal Hygiene and Care of Infants. By C. F. Wightman, F.R.C.S. Eng., Lieut. (late Surg.-Lieut.) 1st Battalion the Hertfordshire Regiment, Medical Surveyor to the Admiralty, Examiner (late Lecturer) in Home Nursing to the London County Council, Hon. Life Member of the St. John Ambulance Association, &c. Price 9d. net.

KING, P. S., AND SON, Orchard House, Westminster, London, S.W.

Medical Benefit. A Study of the Experience of Germany and Denmark. By I. G. Gibson, B.A., D.Sc., Author of "Unemployment Insurance." Price 6s. net.

LIVINGSTONE, E. AND S., 15, Teviot-place, Edinburgh.

Malingering and its Detection under the Workmen's Compensation and Other Acts. By Archibald M'Kendrick, F.R.C.S. E., &c., Physician in Charge jointly of X-ray Medical Electrical, and Balneological Departments, Royal Infirmary, Edinburgh. Price 1s. 6d. net.

Extraction of Teeth. By J. H. Gibbs, F.R.C.S., L.R.C.P., L.D.S. Edin., Dental Surgeon, Edinburgh Royal Infirmary; Lecturer on Dental Surgery and Pathology, Surgeons' Hall, Edinburgh. Price 7s. 6d. net.

SWIFT, STEPHEN, AND CO., LIMITED, 16, King-street, Covent-garden, London, W.C.

The Doctor and His Work. With a Hint of His Destiny and Ideals. By Charles J. Whitby, M.D. Cantab. Price 3s. 6d. net.

WRIGHT, JOHN, AND SONS, LIMITED, Bristol. SIMPKIN, MARSHALL HAMILTON, KENT, AND CO., LIMITED, London.

Diseases of the Throat, Nose, and Ear. For Practitioners and Students. By W. G. Porter, M.B., B.Sc., F.R.C.S. Ed., Surgeon to the Eye, Ear, and Throat Infirmary, Edinburgh. Price 7s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication

ARMOUR, DONALD, F.R.C.S. Eng., has been appointed Dean of the West London Hospital for teaching purposes.

BOURNE-PRICE, T., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant House Surgeon at the Royal Albert Hospital and Eye Infirmary, Devonport.

BRIDE, JOHN W., M.D., B.S. Lond., M.B., Ch.B. Vict., has been reappointed House Surgeon at the Hospital for Diseases of Women and Children, Rusholme, Manchester.

CANT, A., M.B., B.Ch. Birm., has been reappointed Medical Officer for the Maxstoke District of the Meriden Board of Guardians.

CRIBB, H. G., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Superintendent at the Durham County Asylum.

EGAN, JOHN, L.R.C.P. & S. Irel., has been appointed Senior Resident Medical Officer at the Guest Hospital, Dudley.

LASLETT, WILLIAM H., M.B., Ch.B. Vict., has been appointed House Surgeon at the Maternity Hospital, Whitworth-street West, Manchester.

LEIGH, J. DICKINSON, M.D. Edin., F.R.C.S. Edin., D.P.H., has been appointed Whole-time Medical Officer of Health and School Medical Officer for the Borough of Hartlepool.

PARDOE, J. G., M.B., M.S. Aberd., has been appointed Surgeon to the West London Hospital.

PURCELL, N., M.B., Ch.B. Edin., has been appointed House Surgeon at the Maternity Hospital, Whitworth-street West, Manchester.

SMITH, J. LORRAIN, M.D. Edin., has been appointed Joint Pathologist to the Longmore Hospital for Incurables.

SOUTTAR, H. S., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Surgeon to the West London Hospital.

STEWART, WILLIAM, M.B., Ch.B. Edin., has been appointed House Surgeon at the Royal Albert Hospital and Eye Infirmary, Devonport.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ACRE LANE HOME FOR MENTALLY DEFECTIVE BOYS, Acre-lane, Brixton, S.W.—Medical Officer. Salary £30 per annum.

ALL SAINTS' HOSPITAL FOR OUT-PATIENTS, Buxton-street, E.—Honorary Medical Officer.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £80 per annum, with board, residence, &c.

BETHNAL GREEN INFIRMARY AND WORKHOUSE, Cambridge Heath, E.—Assistant Medical Officer. Salary at rate of £100 per annum, with apartments, board, and washing.

BODMIN, CORNWALL COUNTY ASYLUM.—Third Assistant Medical Officer and Pathologist. Salary £150 per annum, with quarters, board, laundry, and attendance.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—Resident Medical Officer, unmarried. Salary £130 per annum, with board and residence.

CANCER HOSPITAL (FREE), Fulham-road, London, S.W.—House Surgeon for six months. Salary £70 per annum.

CARDIFF, THE KING EDWARD VII. WELSH NATIONAL MEMORIAL.—Tuberculosis Physician. Salary £400 per annum.

CARMARTHEN, JOINT COUNTIES ASYLUM.—Second Assistant Medical Officer. Salary £160 per annum, with board, lodging, washing, &c.

CENTRAL LONDON SICK ASYLUM, Colindale-avenue, The Hyde, Hendon, N.W.—Assistant Medical Officer. Salary £120 per annum, with board and residence.

CHELTENHAM GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and lodging.

CHESTER, COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £170 per annum, with board, lodging, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Clinical Assistant in Out-patient Department.

DURHAM COUNTY COUNCIL.—School Medical Inspector. Salary £300 per annum.

EASTBOURNE, PRINCESS ALICE MEMORIAL HOSPITAL.—Honorary Radiologist.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, London, S.E.—Physician to Out-patients.

GISBURNE HOUSE, WATFORD, INDUSTRIAL SCHOOL FOR GIRLS.—Medical Officer. Salary £43 12s. per annum. Also Dentist. Salary £15 per annum.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, London, N.—House Surgeon for six months. Salary at rate of £40 per annum, with board, lodging, and laundry.

HALIFAX ROYAL INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence, board, and washing.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Pathologist. Salary £100 per annum.

HARTLEPOOLS HOSPITAL.—House Surgeon. Salary £100 per annum, with board, washing, and lodging.

LANCASTER, COUNTY LUNATIC ASYLUM.—Assistant Medical Officer, unmarried. Salary 4 guineas per week, with board, lodging, and washing.

LEAMINGTON, WARNEFORD GENERAL HOSPITAL.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board and lodging.

LEEK, STAFFORDSHIRE COUNTY ASYLUM, Cheddleton.—Assistant Medical Officer. Salary £210 per annum, with apartments, board, attendance, and washing.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Physician. Salary at rate of £60 per annum, with residence and maintenance.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon. Salary £120 per annum, with rooms, attendance, board, and washing.

MAIDSTONE, KENT COUNTY ASYLUM. — Fourth Assistant Medical Officer, unmarried. Salary £200 to £220 per annum, with quarters, attendance, washing, &c.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead.—House Physician. Salary £75 per annum, with board, residence, and washing.

NEWCASTLE-UPON-TYNE, CITY AND COUNTY OF.—Medical Officer of Health and Medical Superintendent of City Hospitals for Infectious Diseases. Salary £700 per annum.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160 per annum.

NORTHAMPTON ADMINISTRATIVE COUNTY.—Chief Tuberculosis Medical Officer. Salary £500 per annum.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with apartments, board, washing, and attendance.

NORWICH, JENNY LIND INFIRMARY FOR CHILDREN.—Resident Medical Officer (female) for six months. Salary £50 per annum, with board, apartments, and laundry.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Casualty Officer, unmarried, for six months. Salary £60 per annum, with board, lodging, and washing.

NOTTINGHAM CITY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, and laundry.

PRESTON ROYAL INFIRMARY.—Senior and Junior House Surgeons, unmarried, for six months. Salaries £80 and £60 per annum respectively, with board, residence, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL. Marylebone-road, N.W.—Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, residence, and washing.

ST. MARY'S HOSPITAL, London, W.—Casualty House Surgeon for six months. Salary £100 per annum, with board and lodging.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Assistant House Surgeon, unmarried. Salary £60 per annum, with board, residence, and laundry.

SINGAPORE MUNICIPALITY (HEALTH DEPARTMENT.)—Second Assistant Health Officer. Salary 4200 dollars for first year, up to 4800 dollars for the third year, with free furnished quarters, light, and water. Also Bacteriologist. Salary at rate of 5160 dollars for first year, up to 6000 dollars for the third year.

STAFFORD, STAFFORDSHIRE COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £160 per annum, with apartments, board, and washing.

STAMFORD HILL AND STOKE NEWINGTON DISPENSARY.—Assistant Resident Medical Officer. Salary £120 per annum, with board, apartments, attendance, &c.

STOKE-ON-TRENT INFECTIOUS DISEASES HOSPITAL, Bucknall.—Assistant Medical Officer (female). Salary £100 per annum, with apartments, board, washing, and attendance.

WESTMINSTER GENERAL DISPENSARY, 9, Gerrard-street, Soho, W.—Honorary Physician.

WESTON-SUPER-MARE HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, rooms, and laundry.

WORCESTER COUNTY AND CITY ASYLUM, Powick.—Junior Assistant Medical Officer, unmarried. Salary £160 per annum, with board, apartments, washing, and attendance.

Births, Marriages, and Deaths.

DEATHS.

BAGSHAWE.—On Nov. 2nd, at Warrior-square, St. Leonards-on-Sea, Frederic Bagshawe, M.D., F.R.C.P., J.P., aged 78 years.

BYRNE.—On Nov. 5th, at Sunwick, East Molesey, George Byrne, M.R.C.S., L.R.C.P. Lond., aged 56 years.

MAIR.—On Nov. 4th, in London, after an operation, Ludovic William Darra Mair, of Stone Court, Carshalton, M.D. Lond., Medical Inspector, Local Government Board, aged 46 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

RECENT PISTOL SHOOTINGS.

IF the series of crimes recently committed with pistols does not lead to more stringent measures for the prevention of the sale and carrying of these dangerous weapons, the country will presumably have to wait until a Cabinet Minister or some equally prominent person is assassinated and public feeling thoroughly aroused. Such an event has happened in England before now, and has very nearly happened in the United States, where conditions of life, at any rate in some States, are widely different from those in our cities and provincial towns, and where, no doubt, shooting crimes are of more frequent occurrence than with us. We abstain from comment in detail upon cases in which prisoners are under arrest, but we refer, among others, to the shooting of several persons in and around the Horseshoe Hotel in Tottenham Court-road, with two deaths as its result; to the death of a man at Edmonton through a pistol shot, as to which one of the facts still to be determined is whether there was a crime or whether an accident occurred to a man whose possession of a pistol was at any rate unnecessary; to the murder of a police inspector at Eastbourne—a cruel and wanton crime, whether committed by the man now under arrest or not, and one which occurred in a town some weeks ago rendered notorious by the simultaneous killing of several persons, also by shooting; to the death of a woman in London in a taxicab by a shot from a pistol, whether it was fired by herself or by another person, or by accident; to the raiding of a jeweller's shop in the Edgware-road where no shooting took place, but where a gang of men armed with pistols succeeded in committing a robbery and escaping scot free in a taxi-cab, which according to the driver's story they "commandeered" by threatening him with instant death if he disobeyed; and to a somewhat similar story of demanding money by threats of murder in a provision shop at Balham. There may have been other incidents of the same kind which we have overlooked, and we may refer while discussing the subject to the arrest of two men in Paddington, upon both of whom, according to the evidence of the police, pistols and cartridges were found, and one of whom was stated to have said to the constables, "It is a good job for you all that I did not get my shooter out in time, or else you would all have been shot dead, and then I would have done myself in." The list is a formidable one and the cases have occurred within so brief a space that in none of them has the responsibility been brought home as yet to whoever may have been the guilty parties. Whoever they may be, it is submitted that pistol-owning should be rendered a privilege conceded only to those of irreproachable character and hedged round with stringent conditions, and that pistol-carrying should be made a serious offence. Its prevalence at present exposes law-abiding citizens to constant and unnecessary danger, and may at any time lead to consequences which the whole nation may regret.

REFLEX STIMULATION OF THE VAGUS CENTRE IN SEA-SICKNESS.

To the Editor of THE LANCET.

SIR,—On June 29th last you published for me a clinical note drawing attention to the value of reflex stimulation of the vagus centre and its vicinity by vesication of the skin over the course of the par vagum in the neck, between the mastoid process and the angle of the lower jaw, and quoting cases illustrative of the beneficial effects of this treatment in cardiac, respiratory, and gastric affections.

There is one most distressing form of nausea and sickness which I have had no opportunity of treating—viz., that incidental to travel by sea. As it is reasonable to expect that this condition may also be amenable to reflex influence of the vomiting centre my object in making this communication is to urge those medical men who "go down to the sea in ships" to take advantage of their ample opportunities to test this method of treatment upon the victims of *mal-de-mer* who come under their care. I am, Sir, yours faithfully,

Driffield, E. Yorks, Oct. 28th, 1912. A. T. BRAND, M.D. Aberd.

AN INTERESTING CEREMONY.

ON Oct. 31st the Lord Mayor, Sir Thomas Boor Crosby, M.D., opened the extension for surgical appliances of John Bell and Croyden, Limited, of 50, Wigmore-street, Cavendish-square, London, W. The Lord Mayor, who was received by Mr. Buckston Browne, Mr. James Boyton, M.P., and many members of the medical profession, cut with a pair of gold surgical scissors the ribbon restraining the curtains, and disclosed a well-arranged reception room, containing a display of necessaries for the sick room. In the sterilising rooms sterile dressings were manufactured and prepared in his presence. He was also shown the method of filling ampoules of stovaine and glucose, large numbers of which are being despatched

by the firm to the seat of war. The Lord Mayor commented on the change that had taken place during his experience of over 60 years in medicine and surgery, particularly referring to the marvellous and beneficent results of Lister's discovery which had changed the character of surgery. He recalled his intimacy with the late Jacob Bell, son of the founder of the business which was started in 1786. He referred also to the old-world appearance of Bell's pharmacy, a well-known landmark in Oxford-street until four years ago, when the old-established business of Charles Croyden, formerly assistant with the original John Bell, was amalgamated, under the title of John Bell and Croyden, with Bell's in the present handsome premises in Wigmore-street.

SAND-FLIES.

A CORRESPONDENT writes:—"Amongst the notes of your issue of Sept. 7th, under the heading of 'Sand-Flies,' 'Medical Missionary' asks for information. The fever caused by this fly appears to be a well-recognised condition under the name of Pym's febricula, common all over the Mediterranean littoral. Dr. Wakeling, of Cairo, describes it as a three days' fever with a week's convalescence, and certain sequelæ, caused by the bite of the phlebotomous papatasii. Excellent accounts of the fly and the illness it causes will be found in papers read by Lieutenant-Colonel C. Birt, R.A.M.C., and Professor Llewellyn Phillips, of Cairo, in the Section of Tropical Medicine of the British Medical Association, held in London, July, 1910." A note on Colonel Birt's paper will be found in THE LANCET of Sept. 10th, 1910, p. 835.

PROPOSED ANGLO-AMERICAN MEDICAL ENTENTE.

WE learn from the *Weekly Bulletin* of the St. Louis Medical Society that the American Medical Association has appointed a committee to correspond with the British Medical Association looking to a joint meeting of the two bodies. The committee is composed of Dr. A. T. Bristow, of New York; Dr. W. W. Grant, of Denver; Dr. G. H. Simmons, Chicago; Dr. T. W. Huntington, San Francisco; and Dr. E. J. Goodwin, St. Louis.

THE NEW BATH SPA EXPRESS.

IN 1899 THE LANCET, as the result of the investigations of its Special Commission on Bath, indicated among the incidental advantages of that spa as compared with foreign ones of like character, the avoidance of the long journey that the latter entailed, and the fact that "the separation of members of families from each other (unless specially indicated) need not be complete or prolonged." If that argument was valid in 1899, how much more effective must it be now that a train leaves Paddington daily at 11 A.M., arriving without any intervening stop an hour and three-quarters later, while the return train, leaving Bath at 2.35 P.M., reaches Paddington at 4.30.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 6th, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 31	29·47	N.W.	0·13	70	54	48	47	49	Overcast
Nov. 1	30·29	N.	...	67	46	37	35	37	Fine
,, 2	30·37	W.	...	67	48	36	36	37	Fine
,, 3	30·32	S.W.	...	58	46	34	35	36	Fine
,, 4	30·31	S.W.	...	65	53	36	41	43	Overcast
,, 5	29·85	S.W.	0·12	55	53	43	47	48	Raining
,, 6	30·17	N.E.	0·07	55	53	48	50	51	Overcast

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced for 1912:—

Nov. 8th-16th (London, Olympia).—Motor Exhibition.

In 1913:—

(Easter week) (Berlin).—Fourth International Congress for Physiotherapy.
April 26th (Ghent) (opens).—International Exhibition.
Aug. 6th-12th.—(London).—Seventeenth International Congress of Medicine.
Sept. 2nd-6th (Groningen).—International Physiological Congress.
,, 22nd-28th (Milan).—Fourteenth International Anti-alcoholic Congress
September (Birmingham).—British Association.
(London).—International Medical Exhibition. (Organised by Mr. Henry S. Wellcome.)
(London).—International Historical Congress.
(Chicago).—Congress of the International Association of Refrigeration.
(Washington).—Congress of American Physicians and Surgeons.
(Paris).—Congress of Physical Education.
(Paris).—Congress of the Royal Institute of Public Health.
(Buffalo).—Fourth International Congress of School Hygiene.

In 1914:—

(Vienna).—Third International Congress for Professional Diseases.
(Auckland, N.Z.).—Australasian Medical Congress.
(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.
(Washington, D.C.).—International Congress of Americanists.
(London).—International Dental Congress.
(Paris).—Fourth International Medical Congress on Industrial Accidents.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Dr. J. W. Cropper: The Development of a Parasite of Earthworms (communicated by Sir Ronald Ross, K.C.B.).—Edith R. Saunders: Further Contribution to the Study of the Inheritance of Hoariness in Stocks (Matthiola) (communicated by Prof. W. Bateson).—Prof. A. J. Brown and Mr. F. P. Worley: The Influence of Temperature on the Absorption of Water by Seeds of Hordeum Vulgare in Relation to the Temperature Coefficient of Chemical Change.—Mr. R. Kirkpatrick: Note on Merlia Normani and the "Monticuliporas" (communicated by Prof. A. Dendy).—Mr. J. Thompson: The Chemical Action of Bacillus Cloacæ (Jordan) on Citric and Melic Acid in the Presence and Absence of Oxygen (communicated by Dr. A. Harden).—Mr. G. W. Ellis and Mr. J. A. Gardner: The Origin and Destiny of Cholesterol in the Animal Organism. Part X., On the Excretion of Cholesterol by Man when Fed on Various Diets (communicated by Dr. A. D. Waller).—Prof. R. B. Thomson: On the Comparative Anatomy and Affinities of the Araucarineæ (communicated by Dr. D. H. Scott).—And other Papers.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY.

SECTION OF SURGERY (Hon. Secretaries—James Berry, J. Murray): at 5.30 P.M.

Discussion:

Sarcomata and Myelomata of the Long Bones, opened by
Sir Alfred Pearce Gould, K.C.V.O. (Clinical Diagnosis),
Sir John Bland-Sutton (Pathology),
Mr. G. E. Gask (Prognosis),
Mr. A. Reid (X-Ray Appearances),
Sir Frederic Eve (Treatment).

The following will take part in the discussion:—Mr. R. C. Elmslie, Mr. Ernest Shaw, Mr. C. R. C. Lyster, Mr. Gwynne Williams, Dr. Ironside Bruce, and Mr. S. G. Scott.

FRIDAY.

SECTION OF OTOLOGY (Hon. Secretaries—H. J. Davis, G. J. Jenkins): at 5 P.M.

Cases and Specimens:

Mr. Richard Lake and Mr. A. F. Penny: Two Cases of Vertigo with Low Blood Pressure and Post Rotatory Reactionary Vertigo.
Mr. Ernest West: (1) Thrombosis of Jugular Bulb, Ligation Empyema, Recovery; (2) Injury to Internal Carotid in Curetting Floor of Tympanic Cavity.
Mr. Hugh Jones: Demonstration and Drawings of a New Meatal Periosteal Flap for Mastoid Operation.
Dr. Dan McKenzie: (1) Cavernous Sinus Thrombosis, Acute Mastoiditis, Recovery; Child aged 11; (2) Lens for Use in Mastoid Operation.
Dr. H. J. Davis: (1) Case of Vertigo, (?) Auditory Tumour; Woman aged 30; (2) Cerebellar Hernia following Drainage of Cerebellar Abscess; Boy aged 10; Mastoiditis. And other Cases.

SECTION OF ELECTRO-THERAPEUTICS (Hon. Secretaries—Cecil R. C. Lyster, G. Allpress Simmons): at 8.30 P.M.

Professor Jellinek (Vienna): The Dangers of Electricity from the Clinical, Forensic, and Hygienic Points of View (illustrated by the cinematograph).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish square, W.

MONDAY.—8.30 P.M., Discussion on Respiratory Neuroses (introduced by Dr. S. West). The following will also take part in the discussion:—Sir David Ferrier, Dr. R. Russell, Dr. H. Mackenzie, Dr. L. Guthrie, Dr. F. Buzzard, and Dr. F. E. Batten.

HUNTERIAN SOCIETY, Westminster Hospital (opposite Westminster Abbey).

WEDNESDAY.—4 P.M., Clinical Afternoon. Cases of Special Interest will be shown by Members of the Medical and Surgical Staff. Surgical Cases will be shown by Mr. W. G. Spencer, The President (Mr. A. H. Tubby), Mr. E. R. Carling, and Mr. J. M. G. Swainson. Neurological Cases will by shown by Dr. F. Stewart. A Demonstration of Clinical-Pathological Methods will be given by Dr. R. G. Hebb and Dr. J. A. Braxton Hicks.

UNITED SERVICES MEDICAL SOCIETY, Royal Army Medical College, Grosvenor-road, S.W.

WEDNESDAY.—5 P.M., Col. B. Skinner, M.V.O., A.M.S.: The Crux of the Medical Problem in the Field.

CHILD STUDY SOCIETY, LONDON, Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

FRIDAY.—7.30 P.M., Mme. Pujol-Ségalas (Paris): Maria Montessori's Method and Self Education.

SATURDAY.—3 P.M., Conference on the Montessori System.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., Dr. R. H. P. Crawfurd: Echoes of Pestilence in Literature and Art—Lecture II., To the Black Death (lantern slides). (FitzPatrick Lecture.)

THURSDAY.—5 P.M., Dr. R. H. P. Crawfurd: Echoes of Pestilence in Literature and Art—Lecture III., To the Great Plague of Milan (lantern slides). (FitzPatrick Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. A. M. H. Gray: Clinique (Skin). 5.15 P.M. Lecture:—Dr. J. E. Squire: The Selection of Cases for Sanatorium Treatment.

TUESDAY.—4 P.M., Dr. J. Galloway: Clinique (Medical). 5.15 P.M., Lecture:—Dr. L. Mummery: Chronic Constipation and the Question of Operative Treatment.

WEDNESDAY.—4 P.M., Mr. P. J. Freyer: Clinique (Surgical). 5.15 P.M., Lecture:—Sir Frederic Eve: Some Points in the Diagnosis and Treatment of Malignant Tumours of Bone.

THURSDAY.—4 P.M., Mr. E. R. Carling: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. G. Oliver: Clinical Sphygmometry—Recent Views and Methods.

FRIDAY.—4 P.M., Mr. K. Campbell: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 11 A.M., Mr. Addison: Demonstration of Minor Operations. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. B. Harman: The Use and Abuse of Atropine in Eye work.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Mr. T. Gray: Demonstration of Fractures, &c. 11.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Saunders: Clinical, with cases.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations on the Throat, Nose, and Ear. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Owen: Clinical, with cases.

THURSDAY.—10 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Lecture:—Dr. Owen: Practical Medicine. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. R. Lloyd: Administration of Anæsthetics.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.

MONDAY.—1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department—Room III., Dr. M. Leslie; Room IV., Dr. S. Thompson. 4 P.M., Wards, Dr. M. Leslie. 4.30 P.M. to 5.30 P.M., Lecture Hall, Lecture-Demonstration.

TUESDAY.—1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department—Room III., Dr. Phear; Room IV., Dr. B. King. 2 P.M., Operations and Throat Clinic, Mr. A. Evans. 3 P.M., Wards, Dr. White. 3.30 P.M., Wards, Dr. Phear. 4.30 P.M., to 5.30 P.M., Lecture Hall, Lecture-Demonstration.

WEDNESDAY.—2 P.M., Wards, Dr. A. Davies. Out-patient Department—Room III., Dr. Drysdale; Room IV., Dr. Kellie. 4 P.M., Wards, Dr. Drysdale. 4.30 P.M., Roentgen Ray Department, Dr. Jordan. 7 P.M., Department for the Prevention of Consumption.

THURSDAY.—9.30 A.M., Dental Department, Mr. G. Thomson. 1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Out-patient Department—Room III., Dr. M. Leslie; Room IV., Dr. S. Thompson. 4.30 P.M. to 5.30 P.M., Lecture Hall, Lecture-Demonstration.

FRIDAY.—1.30 P.M., Department for the Prevention of Consumption. 2 P.M., Wards, Dr. Calvert. Out-patient Department—Room III., Dr. Phear; Room IV., Dr. B. King. 3.30 P.M., A Special Clinical Demonstration by one of the Out-patient Physicians.

SATURDAY.—10 A.M., Out-patient Department—Room III., Dr. Drysdale; Room IV., Dr. Kellie. 11.30 A.M., Roentgen Ray Department, Dr. Jordan.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. G. Holmes: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. Singer: Medical. Mr. A. J. Walton: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.15 P.M., Sir M. Morris: Skin Clinique (alternate Tuesdays). 4.30 P.M., Special Lecture:—Mr. M. Robson: On Chronic Jaundice with Gallstones of Hæmatogenous Origin.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. P. Cole: Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery. 2.15 P.M., Special Lecture:—Dr. F. Taylor: Encephalitis.

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. Dr. A. Davies: Pathological Demonstration. 3.15 P.M., Dr. R. Wells: Medicine. 4.30 P.M., Special Lecture:—Mr. A. J. Walton: Carcinoma of Stomach.

FRIDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. Singer: Medical. Mr. A. J. Walton: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford: Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. P. Cole: Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—10 A.M., Dr. W. Steuart: Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. E. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

TUESDAY.—Clinic; 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Gynæcological (Dr. A. E. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Special Demonstration:—Dr. G. N. Meachen: Selected Skin Cases.

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Mr. W. Steuart); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Special Demonstration:—Dr. G. P. Chappel: Selected Medical Cases.

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. A. Duncan).

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. R. Russell: Syphilitic Affections of the Nervous System

FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. Ormerod: Clinical Cases.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

Special Post-Graduate Course in the Diagnosis and Treatment of Pulmonary Tuberculosis, including the Use of Tuberculin:—

MONDAY.—4.30 P.M., Dr. P. Kidd: The Effect of Environment in Pulmonary Tuberculosis.

TUESDAY.—4.30 P.M., Dr. M. Bruce: The Elements of Prognosis in Pulmonary Tuberculosis.

WEDNESDAY.—4.30 P.M., Dr. D. Grant: Home Treatment of Laryngeal Tuberculosis.

THURSDAY.—4.30 P.M., Dr. M. Paterson: The Principles of Treatment of Pulmonary Tuberculosis by Graduated Labour.

FRIDAY.—Expedition to Frimley, leaving Waterloo at 1.15 P.M. Demonstration at the Sanatorium by Dr. Wethered.

LISTER INSTITUTE OF PREVENTIVE MEDICINE, Chelsea Gardens, Chelsea Bridge-road, S.W.

FRIDAY.—4 P.M., Lecture:—Mr. Greenwood: Some Methods of Epidemiological Research.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—2 P.M., Dr. W. Griffith: The Pathology of the Skin. 6 P.M., Mr. W. Hampson: X Rays, Measurement of Dose.

THURSDAY.—6 P.M., Dr. M. Dockrell: Syphilis (continued): Papular (I., Miliary; II., Lenticular; III., Squamous; IV., Moist. Pustular (I., Small; II., Large). Nodular and Gummatous.

QUEEN'S HOSPITAL FOR CHILDREN, Board Room of the Hospital Hackney-road, N.E.

TUESDAY.—4 P.M., Mr. D. Drew: Chronic Surgical Tuberculous Affections.

ROYAL DENTAL HOSPITAL OF LONDON SCHOOL OF DENTAL SURGERY.

TUESDAY.—6 P.M., Mr. F. Coleman: The Use and Abuse of Gauze or Wool Dressings in the Treatment of Wounds of the Mouth.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY.—4 P.M., Dr. Poynton: Some Unusual Cases of Jaundice.

ANCOATS HOSPITAL, Manchester.

THURSDAY.—7.15 P.M., Dr. F. C. Moore: Some Cases of Gastric Disease. (Post-Graduate Clinic.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY.—4.30 P.M., Dr. E. N. Cunliffe: Demonstration of Cases of Pulmonary Tuberculosis. (Post-Graduate Clinic.)

FRIDAY.—4.30 P.M., Mr. P. R. Wrigley: Demonstration of Surgical Cases. (Post-Graduate Clinic.)

SALFORD ROYAL HOSPITAL.

TUESDAY.—Dr. H. T. Ashby: Chorea and Anæmia. (Post-Graduate Demonstration.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (11th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

TUESDAY (12th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (13th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (14th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M. Aural and Ophthalmic), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.) Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (16th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.) Hospitals operations are performed daily. At the Western Ophthalmic Hospital operations are performed on Monday, Tuesday, Thursday, and Friday at 3 P.M., and on Wednesday and Saturday at 11 A.M.

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Communications, Letters, &c., have been received from—

A.—Dr. H. G. Adamson, Lond.; Aberdeen, Medical Officer of Health of; Anxious; Messrs. George Allen and Co., Lond.; *American Journal of Gastro-Enterology*, Philadelphia, U.S.A.; Mr. J. Attard, Valletta; Association for Promoting the Training and Supply of Midwives, Lond.; Mr. H. Allen, Newport; Messrs. R. Anderson and Co., Lond.; Ardath Tobacco Co., Lond.; Mr. Frank Argles, Wanstead; A. F.

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